



## Study on Pregnancy Outcome in Primigravida Undergoing Reinduction of Labour with Oral Pge1 25mcg

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### ABSTRACT

This was a prospective observational study conducted among 320 primigravida with gestation age more than or equal to 37 weeks with singleton pregnancies undergoing reinduction of labor with oral PGE1 25 mcg carried out at SAT hospital, Thiruvananthapuram. The objective of the study was to study the obstetric outcome (Normal vaginal delivery/LSCS) in primigravida reinduced with oral PGE1 25mcg and to study the factors associated with the obstetric outcome of LSCS in primigravida reinduced with oral PGE1 25mcg. The study variables were Age, Body Mass Index, Gestational Age, Intrapartum variables like preinduction MBS, indication of indication, Foley inserted or not when MBS <3, Number of PGE1 for reinduction, Induction delivery interval, Indication of LSCS. The rate of caesarean section was 46.56% and rate of vaginal delivery was 53.43%. The most common indication of induction was hypertensive disorders in pregnancy. The mean induction delivery interval was 60.1±10.8 hours. The induction delivery interval was prolonged when the preinduction MBS <3. It was observed that when pre induction modified bishop score <3 and number of doses of misoprostol given for reinduction was more than 6, the obstetric outcome was more of caesarean section. The most common indication of LSCS was failed induction. When modified bishop score <3, cervical ripening with foley catheter prior to oral misoprostol had a greater number of vaginal deliveries compared to using oral misoprostol alone. Prolonged period of induction increased caesarean section rate.

**Keywords;** Reinduction of labour, Oral PGE1, MBS

### I. INTRODUCTION

Induction of labour is defined as an intervention designed to artificially initiate uterine contractions leading to progressive dilatation and effacement of cervix and birth of the baby. Induction of labour is indicated only when it agreed that the mother or fetus benefit from a higher probability of healthy outcome than if the

birth is delayed. Cervical ripening is a component part of induction of labour.

### II. LITERATURE REVIEW

The human cervix consists mainly of extracellular connective tissue. The predominant molecules of this extracellular matrix are type I and type 3 collagen, with a small amount of type 4 collagen at the basement membrane. Intercalated among the collagen molecules are glycosaminoglycans and proteoglycan predominantly dermatan sulphate, hyaluronic acid and heparin sulphate. Fibronectin and elastin also run among the collagen fibers. Cervical ripening is a component part of induction of labour employed when cervix is unfavorable. Cervical ripening refers to softening of cervix and is associated with decreased collagen fiber alignment and collagen fiber strength leading to cervical softening. Prostaglandins are used for cervical ripening. In the study oral PGE1 25 mcg was used for the induction of labour. Oral PGE1 25mcg tablet given 2 hourly for 8 doses and if not getting into labour leave alone for next 24 hrs, after that per vaginal examination done and if MBS is <6 reinduction done with oral PGE1 for 8 more doses or till labour initiated.

### III. METHODS

A Prospective observational study was conducted at the Department of Obstetrics and Gynaecology SAT Hospital Govt Medical College Thiruvananthapuram. After getting approval from institutional Research and Ethics committee over a period of 12 months. The sample size was calculated using formula

$$n = \frac{Z^2 \cdot 1 - \alpha / 2 \cdot P(1 - P)}{(\epsilon P)^2}$$

With extended proportion (ORAL PGE1 users) 0.25, relative precision of 20% the minimum sample size required was 320. After receiving written informed consent the data was collected



using a semistructured proforma. All primigravida with gestational age more than or equal to 37 weeks with singleton pregnancy undergoing reinduction of labour with oral PGE1 25 mcg were included in the study. The study variables were Age, Body Mass Index, Gestational Age, Intrapartum variables like preinduction MBS, indication of indication, Foley inserted or not when MBS <3, Number of PGE1 for reinduction, Induction delivery interval, Indication of LSCS.

#### IV. STATISTICAL ANALYSIS

Data was entered in the excel sheet. Quantitative variables were expressed in mean and standard deviation. Qualitative variables were

expressed in percentage. Statistical test of significance by student t test for quantitative variables and chi square test for qualitative variables. Analysis of data was done using statistical software SPSS

#### V. RESULT

The study was aimed to understand the pregnancy outcome in primigravida undergoing reinduction of labour with oral PGE1 25mcg at SAT Hospital. In the study 320 women undergoing reinduction of labour was studied. The rate of caesarean section was 46.56% and rate of vaginal delivery was 53.43%.

**TABLE 1: MATERNAL AGE DISTRIBUTION**

Age in years	LSCS		Normal Vaginal delivery		Total		$\chi^2$	Df	p
	N	%	N	%	N	%			
≤20	21	14.1	31	18.1	52	16.3	5.75	3	0.125
21-25	78	52.3	101	59.1	179	55.9			
26-30	38	25.5	33	19.3	71	22.2			
>30	12	8.1	6	3.5	18	5.6			
Total	149	100	171	100	320	100			

**Table 2 MEAN MATERNAL AGE IN YEARS**

OUTCOME	N	Age in years	
		Mean	Sd
LSCS	149	24.5	3.8
NVD	171	23.5	3.2

The mean age in LSCS group is 24.5±3.8 and in vaginal delivery group is 23.5±3.2 years. The obstetric outcome was comparable with p value > 0.05

**Table 3. DISTRIBUTION OF BODY MASS INDEX**

BMI	LSCS		Normal Vaginal delivery		Total		$\chi^2$	Df	p
	N	%	N	%	N	%			
Under weight	6	4	12	7	18	5.6			
Normal	68	45.6	65	38	133	41.6			



Over weight	54	36.2	73	42.7	127	39.7	9.14	5	0.104
ClassI obesity	17	11.4	16	9.4	33	10.3			
ClassII obesity	1	0.7	5	2.9	6	1.9			
ClassIII obesity	3	2	0	0	3	0.9			
Total	149	100	171	100	320	100			

Among the study populations, 41.6% are in normal weight category. 39.7% are in overweight and 13.1% are in obese category where as 5.6%

subjects are in underweight category. The obstetric outcome was comparable in terms of body mass index with p value >0.05.

**Table4. DISTRIBUTION OF GESTATIONAL AGE IN WEEKS**

GESTATIONAL AGE	LSCS		Normal Vaginal delivery		Total		$\chi^2$	df	p
	N	%	N	%	N	%			
37wks-37wks6 Days	49	32.9	64	37.4	113	35.3	2.70	4	0.609
38wks-38wks6 Days	53	35.6	54	31.6	107	33.4			
39wks-39wks6 Days	34	22.8	36	21.1	70	21.9			
40 wks	13	8.7	15	8.8	28	8.8			
>40wks	0	0	2	1.2	2	0.6			
Total	149	100	171	100	320	100			

The obstetric outcome was comparable in terms of gestational age at the time of induction. 32.9% of LSCS was done at 37-37+6weeks & 35.6% of

LSCS was done at 38-38 + 6 weeks. 69% of total vaginal deliveries were at gestational age <39 weeks.



**TABLE 5 : DISTRIBUTION OF INDICATION OF INDUCTION**

INDICATION OF INDUCTION	LSCS		Normal Vaginal Delivery		Total	
	N	%	N	%	N	%
GESTATIONAL HYPERTENSION	37	24.8	46	26.9	83	25.9
CHRONIC HYPERTENSION	2	1.3	2	1.2	4	1.3
PRE-ECLAMPSIA	11	7.4	13	7.6	24	7.5
GDM ON MNT	13	8.7	18	10.5	31	9.7
GDM ON HA	3	2	0	0	3	0.9
GDM ON INSULIN	20	13.4	19	11.1	39	12.2
OVERT DM ON INSULIN	2	1.3	1	0.6	3	0.9
MACROSOMIA	5	3.4	4	2.3	9	2.8
NEAR DATE	10	6.7	6	3.5	16	5
ON DATE	11	7.4	14	8.2	25	7.8
PAST DATE	0	0	2	1.2	2	0.6
DECREASED FETAL MOVEMENTS	5	3.4	9	5.3	14	4.4
GESTATIONAL THROMBOCYTOPENIA	6	4	4	2.3	10	3.1
OLIGAMNIOS	5	3.4	6	3.5	11	3.4
STATE I FGR	10	6.7	16	9.4	26	8.1
CLINICAL Y IUGR	7	4.7	7	4.1	14	4.4
PROM	1	0.7	3	1.8	4	1.3
TERM ICT POSITIVE	1	0.7	1	0.6	2	0.6
Total	149	100	171	100	320	100

Most common indication of induction was hypertensive disorders of pregnancy 34.7% followed by gestational diabetes mellitus 22.8%.

**Table 6: DISTRIBUTION OF FOLEY INSERTION IN MBS <3**

FOLEY	LSCS		Normal Vaginal Delivery		Total		$\chi^2$	df	P
	N	%	N	%	N	%			
Yes	11	30.6	25	69.4	36	100.0			



No	53	80.3	13	19.7	66	100.0	4.7	1	0.000
Total	64	62.7	38	37.3	102	100.0			

Study population who had preinduction MBS <3, was 106 of which 36 cases had pre induction cervical ripening with foley catheter and in 66 patients foley was not inserted. When foley catheter was used for preinduction cervical ripening when MBS<3 ,69.4% delivered vaginally and

30.6% underwent LSCS. In patients whom foley was not inserted when MBS<3, only 19.7% delivered vaginally and 80.3% underwent LSCS, with p value 0.000 which was statistically significant.

**PREINDUCTION MODIFIED BISHOP SCORE**

**Table 7.MEAN OF PREINDUCTION MODIFIED BISHOP SCORE**

OUTCOME	N	PREINDUCTION MBS		T	P
		Mean	sd		
LSCS	149	2.6	1.0	4.589	<0.001
NVD	171	3.0	0.8		

Mean preinduction modified bishop score in LSCS group is 2.6±1.0 and in vaginal delivery group is 3.0±0.8. There is significant difference with a p value <0.001.

**Table8: DISTRIBUTION OF PREINDUCTION MODIFIED BISHOP SCORE**

PRE INDUCTION MBS	LSCS		Normal Vaginal Delivery		Total		χ <sup>2</sup>	df	p
	N	%	N	%	N	%			
<3	67	45.0	35	20.5	102	31.9	22.007	1	<0.001
3-6	82	55.0	136	79.5	218	68.1			
Total	149	100.0	171	100.0	320	100.0			

There was significant difference in the preinduction modified bishop score with p value <0.001.

**NUMBER OF ORAL PGE1 USED FOR REINDUCTION**

**Table9.MEAN OF NUMBER OF ORAL PGE1 USED FOR REINDUCTION**

OUTCOME	N	PGE1 NEEDED FOR REINDUCTION		T	P
		Mean	sd		
LSCS	149	6.4	2.3	3.977	<0.001
NVD	171	5.3	2.5		



Mean number of doses of misoprostol used in LSCS group is  $6.4 \pm 2.3$  and in the vaginal delivery group is  $5.3 \pm 2.5$ . There is significant difference in number of doses of misoprostol used for reinduction with p value  $< 0.001$ .

**Table10: DISTRIBUTION OF ORAL PGE1 USED FOR REINDUCTION**

PGE1 NEEDED FOR REINDUCTION	LSCS		Normal Vaginal delivery		Total		$\chi^2$	df	P
	N	%	N	%	N	%			
<3	16	10.7	34	19.9	50	15.6	16.159	2	<0.001
3-6	37	24.8	65	38.0	102	31.9			
>6	96	64.4	72	42.1	168	52.5			
Total	149	100.0	171	100.0	320	100.0			

64.4% who underwent LSCS needed >6 doses of oral PGEI for reinduction

**TABLE 11 : MEAN INDUCTION DELIVERY INTERVAL**

N	171
MEAN	60.1
STD DEVIATION	10.8

The mean induction delivery interval was  $60.1 \pm 10.8$  hours

**TABLE 12: MEAN INDUCTION DELIVERY INTERVAL BASED ON MBS**

PREINDUCTION MBS	INDUCTION DELIVERY INTERVAL		t	p
	Mean	Std Deviation		
<3	64.09	11.099	2.5	0.015
3-6	59.13	10.545		

The mean induction delivery interval when the modified bishop score <3 was  $64.09 \pm 11.099$  and when modified bishop score 3-6 was  $59.13 \pm 10.545$  and it was statistically significant with a p value of 0.015.

**Table13: DISTRIBUTION OF INDICATIONS FOR LSCS**

INDICATION OF LSCS	Frequency	Percentage
FAILED INDUCTION	91	61.1
MSAF	17	11.4



FETALDISTRESS	17	11.4
FIRSTDEGREECPD	17	11.4
ARRESTOFDESCENT	3	2
ARRESTOFDILATATION	1	0.7
SUSPECTEDABRUPTION	1	0.7
MATERNALPYREXIA	2	1.3
Total	149	100

Major indications for LSCS were failed induction 61.1% followed by meconiumstained liquor, fetal distress and CPD each of them contributed 11.4% each.

## VI. DISSCUSION

In the study 320 women undergoing reinduction of labour was studied. The rate of caesarean section was 46.56% and rate of vaginal delivery was 53.43%. The mean induction delivery interval was 60.1±10.8 hours. When the age group was compared, among the study population 55.9% of the study subjects were in the age group of 21-25 years The mean age in the LSCS group was 24.5±3.8 and in the vaginal delivery group was 23.5±3.2 years. 59.1% of women who delivered vaginally and 52.3% who underwent LSCS were in the age group of 21-25 years. No statistically significant difference was observed. In contrary in the study conducted by L Dunn et al (4) advanced maternal age was associated with more caesarean deliveries. There was no statistically significant difference in the obstetric outcome based on the body mass index. In contrary, the study conducted by JM boshomane et al (5) high BMI was associated with failed induction of labour (31.9±6.8, p value 0.002). Obstetric outcome of the study population was comparable in terms of gestational age at the time of induction. 32.9% of LSCS was done at 37-37+6 weeks and 35.6% LSCS between 38-38+6 weeks. 69% of total vaginal deliveries were at gestational age <39 weeks, no statistically significant difference was observed. In contrary in the study conducted by kamlungkuea T et al (6), gestational age of 37- 39 weeks was significantly associated with vaginal deliveries (p value< 0.001).

The main indication of induction was hypertensive disorders in pregnancy 34.7% and this was similar to the study conducted by AM Mbele et al (7) and JM Boshomane et al (5). The mean modified bishop score at the time of induction in LSCS group is 2.6±1.0 and in the vaginal delivery group is 3.0±0.8. There was statistically significant

difference with p value<0.001.31.3% cases in the study population had pre induction MBS<3 In the study conducted by Tove Wallstrom et al (5)induced deliveries with immature cervix (MBS ≤5 were associated with an increased risk of ending in CS . When modified bishop score<3 ,induction of labour with foley catheter followed by oral misoprostol had more number of vaginal deliveries compared to using oral misoprostol alone where the obstetric outcome was more of LSCS.Study population who had pre induction MBS<3 was 106 of which 36 cases had cervical ripening with foley catheter prior to giving oral misoprostol In the other 66 patients foley was not inserted.When foley catheter was used cervical ripening ,69.4% delivered vaginally and 30.6% underwent LSCS.In patients whom foley was not inserted when MBS<3 only 19.7% delivered vaginally and 80.3% underwent LSCS, with p value 0.000 statistically significant.This was similar to the study conducted by S Kehl et al(8).

Mean number of doses of misoprostol used in LSCS group was 6.4±2.3 and in the vaginaldeliverygroupwas5.3±2.5.Itwasstatistically significantwithapvalue<0.001. 52.5% cases used >6 doses of oral misoprostol for reinduction. 64.4% of who underwent LSCS used more than 6 doses for reinduction. This was similar to the study conducted by KAdu Bonsaffoh etal (9) were caesarean section rate increased with a greater number of doses of misoprostol used.

The total number of vaginal deliveries was 171(53.43%). Mean induction delivery interval was 64.09±11.099 hourswhen preinduction MBS<3 and 59.13±10.545 when preinduction MBS >3. The induction delivery interval was prolonged when the preinduction MBS<3. It was statistically significant similar to the study conducted by VL Deshmukh et al (10).

## VII. CONCLUSION

The rate of caesarean section was 46.56% and rate of vaginal delivery was 53.43%. The mean induction delivery interval was 60.1±10.8 hours.



The induction delivery interval was prolonged when the preinduction MBS<3.

The obstetric outcome was comparable in terms of age, body mass index and gestational age at the time of induction. It was observed that when pre induction modified bishop score <3 and number of doses of misoprostol given for reinduction was more than 6, the obstetric outcome was more of caesarean section. The most common indication of induction was hypertensive disorders in pregnancy. The most common indication of LSCS was failed induction. When modified bishop score<3, induction of labour with foley catheter followed by oral misoprostol had a greater number of vaginal deliveries compared to using oral misoprostol alone where the obstetric outcome was more of LSCS. Hence it can be concluded that the induction delivery interval was prolonged when the modified bishop score was <3. Cervical ripening with foley catheter prior to oral misoprostol increased vaginal deliveries compared to caesarean sections. Prolonged period of induction increased the obstetric outcome of LSCS.

Ethical clearance :

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### REFERENCES

- [1]. World Health Organization. WHO recommendations for induction of labour. World Health Organization; 2011.
- [2]. Kumari SS, Malhotra J, Marg SB, City K. Induction of Labor.
- [3]. Wallstrom T, Jarnbert-Pettersson H, Stenson D, Akerud H, Darj E, Gemzell-Danielsson K, Wiberg-Itzel E. Labor induction with orally administered misoprostol: a retrospective cohort study. *BioMed research international*. 2017 Sep 18;2017.
- [4]. Dunn L, Kumar S, Beckmann M. Maternal age is a risk factor for caesarean section following induction of labour. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2017 Aug;57(4):426-31.
- [5]. Boshomane JM, Sebitloane HM. Factors associated with successful induction of labour with oral misoprostol in term or post-term pregnancies. *In Obstetrics & Gynaecology Forum* 2019 Sep 1 (Vol. 29, No. 3).
- [6]. Kamlungkuea T, Manonai J, Suriyawongpaisal P, Hansahiranwadee W. Factors Predicting Successful Vaginal Delivery Following Induction of Labor in Term Pregnancy. *International Journal of Women's Health*. 2022;14:245.
- [7]. Mbele AM, Makin JD, Pattinson RC. Can the outcome of induction of labour with oral misoprostol be predicted?. *South African Medical Journal*. 2007 Apr 1;97(4):289-92.
- [8]. Kehl S, Weiss C, Dammer U, Heimrich J, Beckmann MW, Faschingbauer F, Sütterlin M. Double-balloon catheter and sequential oral misoprostol versus oral misoprostol alone for induction of labour at term: a retrospective cohort study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2016 Sep 1;204:78-82.
- [9]. Adu-Bonsaffoh K, Seffah J. Factors associated with adverse obstetric events following induction of labour: a retrospective study in a tertiary hospital in Ghana. *African Health Sciences*. 2022 Dec 23;4(4):348-56.
- [10]. Deshmukh VL, Rajamanya AV, Yelikar KA. Oral misoprostol solution for induction of labour. *The Journal of Obstetrics and Gynecology of India*. 2017 Apr;67(2):98-103.