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Original Research Article

A study of effect of oral PGE1 and cervical PGE2 on induction of labor and mode of delivery

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ABSTRACT

Background: Induction of labor is one of the most important procedures done by the Obstetricians. Induction of labor with the help of prostaglandins offer the advantage of promoting cervical ripening along with stimulating the contractility of the myometrium.
Methods: 200 pregnant women with singleton pregnancy both nulliparous and multiparous, were included in the study at term gestation (>39weeks) with Bishop's score <6, and reactive NST. The subjects were divided in to two groups Group A including patients who were given oral PGE1 - 50 mcg Tab, and Group B with cervical PGE2, 0.5 mg, gel. The outcome indicators were recorded in both Group A and Group B and analyzed. The mean time taken from induction to vaginal delivery in Group A was 628±67 minutes and in Group B was 839±118 minutes. Incidence of LSCS in Group B when compared to Group A (p value <0.005).
Results: Incidence of LSCS in Primi's in Group B compared to Primi's in Group A was statistically significant (p value 0.009). Non-progression of labor was observed to be the major indication for LSCS in Group B. Meconium stained labor was found to be the major indication for LSCS in Group A.
Conclusions: The study concludes that using 50 mcg oral misoprostol, is an effective and safe mode of induction of labor in comparison to PGE2 gel. Vaginal deliveries are more with the use of oral misoprostol and the induction to delivery interval is also lesser than that in cervical PGE2 use.

Keywords: Induction, Labor, Prostaglandin

INTRODUCTION

Induction of labor is one of the most important procedures done by the Obstetricians. The Incidence of induction across different settings varies from 5 to 22% of all labor room admissions.[1-3] Induced labor is artificial stimulation of uterine contractions before the onset of labor, any time after the fetus attains viability with the main aim to achieve vaginal birth.[4] Pharmacological modes of induction of labor include prostaglandins (per oral or intra-vaginal or intra-cervical) and oxytocin .Successful induction of labor is related to the condition or state of the cervix.[5] The common indications for induction are post-dated pregnancy, PROM, and elective inductions.[4] Induction of labor with the help of prostaglandins offer the advantage of promoting cervical ripening along with stimulating the contractility of the myometrium.[1-3] The indications for Induction has increased so much in modern obstetrics to avoid the slightest risk to baby or mother that we are electively inducing labor at 39 weeks of pregnancy; though we know that induction is carried out routinely in postdated pregnancies. Many studies have indicated that about 10% of pregnancies remain undelivered beyond 42 weeks, so timely induction remains an important statement to bring out better labor outcomes in both baby and mother.[6] The

work embodied here aims to study the effect of oral PGE1 and cervical PGE2 on induction of labor and the outcomes such as Induction to delivery interval, Incidence of vaginal delivery, Incidence of emergency LSCS and indications for LSCS.

METHODS

200 pregnant women with singleton pregnancy both nulliparous and multiparous, were included in the study at term gestation (>39weeks) with Bishop's score <6 and reactive NST. The study population was selected from the patients who came for safe confinement from the period of August 2015 to August 2016, at DM WIMS Medical college hospital, Wayanad. All women included in the study were above 18 years and less than or equal to 35 years of age. Women with previous history of LSCS, history of uterine surgery, bad obstetrics history, multiple gestation, non-reassuring fetal heart rate, all high risk pregnancies, patients with CPD, patients with known contra indications to prostaglandins, PROM and Placenta Previa were excluded from the study. All participants included in the study were selected for induction as per the institution induction protocol and had given an informed written consent after they were explained about the objective of the study (induction consent). A bimanual pelvic examination was done for assessment of cervical Bishop's score. NST was done to ensure the fetal wellbeing on admission and an hour before application of prostaglandin.

The subjects were divided in to two groups Group A (n=100) and Group B (n=100). All women were admitted in labor ward, after an NST were induced as following,

Group A included patients who were given oral PGE1 - 50 mcg Tab, doses repeated once every 4 to 5 hours, at a maximum of 3 doses, and

Group B was given cervical PGE2, 0.5 mg, gel, at a maximum of 3 doses and were re-assessed every 6 hours for the progress of labor.

Failure of induction was indicated by subjects not progressing into active labor within 12 hours of the initial dose and non-progressing after 12 hours in active labor.

The outcome indicators such as Induction to delivery interval, Incidence of vaginal delivery, Incidence of emergency LSCS and indications for LSCS were recorded in both Group A and Group B and analyzed.

Microsoft office excel 2013 and r software were used for statistical analysis.

RESULTS

The average age of the subjects included in the study was 25.3±5.22.

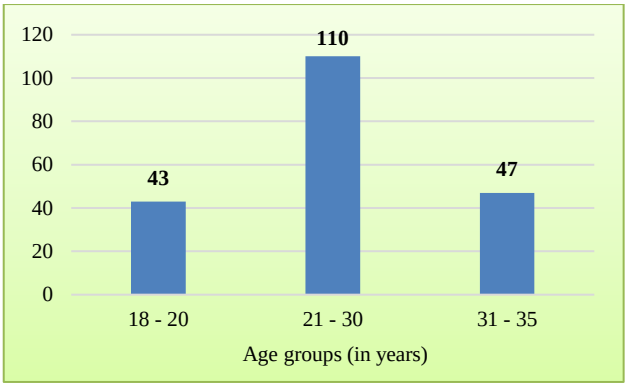

Figure 1: Age distribution.

The mean time taken from induction to vaginal delivery in Group A was 628±67 minutes and in Group B was 839±118 minutes.

The time taken from induction to delivery with Group A was shorter in comparison to Group B, with a 'p' value of 0.4 and the results were positively correlated with a 'r' value of 0.83.

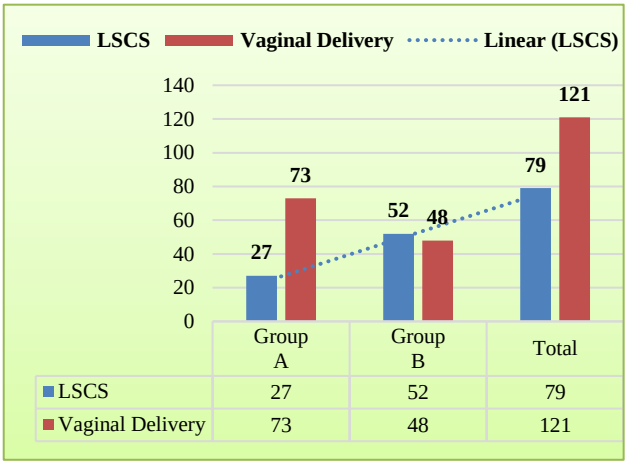

Figure 2: Incidence of vaginal deliveries and LSCS.

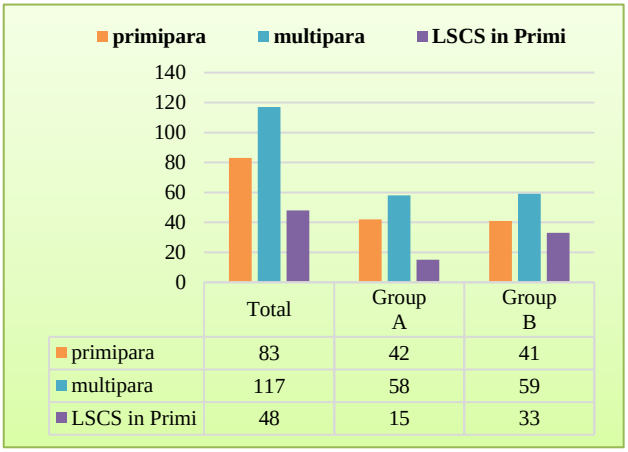

Figure 3: Incidence of LSCS in Primi's.

Incidence of LSCS in Group B when compared to Group A, had a 'p' value of <0.005, which is statistically highly significant.

Incidence of LSCS in Primi's in Group B compared to Primi's in Group A was statistically significant with a 'p'value of 0.009.

Indications for LSCS

The major indications for LSCS in both groups after induction were identified as

- NPL – Non progression of Labor (malposition's of vertex , cervical dystocia)
- F.D. – Fetal Distress (abnormal CTG patterns)
- MSL – Meconium Stained Liquor (grade 2, grade 3 with fetal distress)
- Miscellaneous (labor abnormalities).

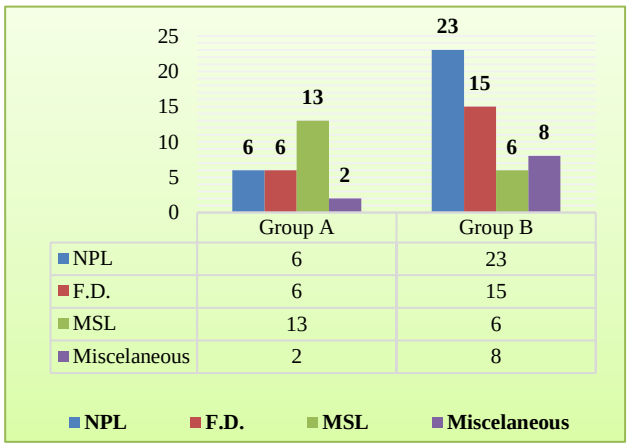

Figure 4: Indications of LSCS.

Meconium stained labor as an indication for LSCS in Group A had a 'p' value of <0.1 which is statistically significant

Non Progression of labor as an indication for LSCS in Group B had a 'p' value of <0.001 which is statistically highly significant

DISCUSSION

The average age group of the subjects selected for the current study was 25.3±5.22. The majority of patients were in the age group of 20 to 30. This was in concurrence with previous studies which have shown that women more than 35 years age had more incidence of antenatal and perinatal medical complications and were excluded as per our criteria.[7-9]

The mean time taken from induction to vaginal delivery in Group A was 628±67 minutes and in Group B was 839±118 minutes. The time taken from induction to delivery with Group A was significantly shorter in comparison to Group B, with a 'p' value of 0.4 and the results were positively correlated with a 'r' value of 0.83. This is in accordance with the previous studies which had similar results where induction to delivery time was shorter with misoprostol compared to dinoprostone.[10,11]

The PGE1 being an oral tablet, due to its better bio availability, can be a more effective agent for cervical ripening and uterine contractility for induction of labor compared to intra vaginal cervigel, the manual application of which might not deliver the desired amount of drug in the correct position.

In current study, we found that the Incidence of LSCS in Group B when compared to Group A was high with a 'p' value of <0.005, which is statistically highly significant. Our study observed that the incidence of LSCS in Primi's in both groups were generally high. These findings are in line with Khan NB et al who reported nulliparity to be a significant factor for failure of induction.[12] Authors also observed that incidence of LSCS in Primi's in Group B compared to Primi's in Group A was higher with a 'p'value of 0.009.

Non Progression of labor was observed to be the major indication for LSCS in Group B.

These results showing increased incidence of LSCS in Group B using intracervical PGE2 could be attributed to various labor specific abnormalities like persistent occipito-posterior position of vertex, cervical dystocia, and inappropriate instillation of intracervical gel.

Our findings regarding the increased incidence of LSCS with PGE2 in comparison with PGE 1, is in concurrence with the results of studies which found low-dose oral misoprostol as effective and safe as vaginal dinoprostone with significantly fewer women requiring caesarean delivery.[13] Even the studies that used 50mcg oral misoprostol similar to present study, had lesser incidence of cesarean section.[14]

Meconium stained liquor was found to be the major indication for LSCS in Group A. This higher incidence might be in relation to the dose we used, i.e. 50 mcg per oral instead of 25mcg per oral used in other studies which did not show any difference in fetal and maternal events.[11]

The study has many limitations such as (i) the study does not consider the incidence and timing of augmentation of labor with oxytocin in the study groups (ii) PROM patients were excluded due to the contraindication to the use of intracervical PGE2, (iii) the study is confined to a specific age group which did not include elderly gravida's and pregnant women with associated medical co-morbidities.

The study hints towards the safety and efficacy of 50mcg misoprostol given orally for a maximum of 3 doses at an

interval of 4 to 6 hours with proper monitoring of progress of labor leading to successful vaginal delivery with good neonatal outcomes in majority of cases.

The study concludes that using 50 mcg oral misoprostol, is an effective and safe mode of induction of labor (in >39 weeks term pregnant women with Bishop's score <6) in comparison to PGE2 gel. The number of vaginal deliveries are more with the use of oral misoprostol and the induction to delivery interval is also lesser than that in intra-cervical PGE2 use.

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Ethical approval: Not required

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