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**ORIGINAL ARTICLE**

# Outcome of Induction of Labour in Nulliparous Women

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## ABSTRACT

**Objective:** To determine the outcomes following induction of labor in nulliparous women presenting to tertiary care facility.

**Study Design**: Case Series

**Place and Duration:** Department of Obstetrics & Gynaecology, Aga Khan University & Hospital Karachi. Duration was Six months from 15thJanuary 2016 - 15th June 2016.

**Methadology:** Admitted women was selected, women were induced with PGE2 3mg vaginal tablet, inserted in the posterior vaginal fornix. This was repeated at 4-hour intervals, if contractions are not initiated. Maximum 6 mg was given. Decision was taken for cesarean section 4 hours post second dose by the consultant having more than 2 years of post-fellowship experience.

**Results:** 100 women enrolled in this study, mean age of the patients was 26.9±3.9 years. BMI of the patient were 30.4±4.5 kg/m$^2$. Stratification analysis was performed and observed that statistically significant association in MOD in nulliparous women with age and dose of PGE2. MOD of delivery in nulliparous women was not associated with height weight BMI gestational age and baby NICU admission.

**Conclusion:** Elective induction of labour at term gestation can reduce perinatal mortality and morbidity in Pakistan with increasing the risk of operative delivery.

**Keywords:** Induction of labour, Nulliparous women, Unfavorable cervix.

## INTRODUCTION

31.8 percent of newborns in the United States were delivered via caesarean section in 2007, according to provisional birth data [1].

It is estimated that one-third of women in affluent nations give birth by caesarean section, making caesarean section one of the most prevalent procedures for women [2].

The causes for the rise in the use of caesarean sections are many and varied. Cesarean section birth is associated with significant hazards for both the mother and her child, both during the current pregnancy and in the future [3].

All age groups, races, and ethnicities have shown an increase in the number of caesarean deliveries.

A number of causes, including the introduction of evidence-based recommendations favouring caesarean delivery for a breech presentation and concerns about the safety of a trial of labour for women with a previous caesarean delivery, have contributed to this shift.(2)

For purposes of convenience and in the absence of any condition that necessitates delivery, a woman may chose to have her labour induced [4]. Greater operative deliveries, more pain relief, and less meconium in labour have been found in case-controlled studies or randomised trials that use a case-control design. Amniotic fluid index (AFI), diminished foetal movements, mild pregnancy-induced hypertension (PIH), favourable Bishop score, tiny for gestational age foetus, excess liquor, macrosomia and Impaired Glucose Tolerance at or after 36 weeks of pregnancy are among the common marginal indications.

Increased risk of caesarean birth, iatrogenic prematurity and cost are major problems related with inducing labour. An increased risk of excessive blood loss, postpartum infection, and maternal mortality are all linked to emergency caesarean delivery when compared to a routine vaginal delivery. Nulliparity, diabetes, and hypertension are all known causes of failing IOLs. Another risk factor for caesarean birth in IOL is the length of induction. Caesarean deliveries are more common in the later stages of IOL compared to the earlier stages, with more vaginal deliveries happening in the earlier stages. Caesarean risk is increased greatly by individual physician decision making [7, 8].

Intra vaginal insertion of Dinoprostone (PGE2), prostaglandin E1 (PGE1) analogue Misoprostol, or intra-cervical insertion of a balloon catheter are the most popular procedures for labour induction, especially when the uterus is not in the most favourable position. Present study was conducted with aimed to determine the outcomes following induction of labor in nulliparous women presenting to tertiary care facility.

## MATERIALS AND METHODS

This case series was conducted at Department of Obstetrics &Gynaecology, Aga Khan University & Hospital Karachi. Duration was Six months from 15thJanuary 2016 - 15th June 2016. Total 100 nulliparous women with singleton pregnancy having gestational age 37-41 weeks were enrolled in this study. Patients ages were ranging between 20 to 35 years. Patients small for gestational age, macrosomic babies weight >4 kg, and allergic to PGE2 on history were excluded.

Informed consent was taken from all eligible women. The purpose procedure, benefits and risk was explained prior to inclusion of subjects in the study. As per the hospital protocol, women were induced with PGE2 3mg vaginal tablet, inserted in the posterior vaginal fornix. This

was repeated at 4-hour intervals, if contractions are not initiated. Maximum 6 mg were given. Decision was taken for cesarean section 4 hours post second dose by the consultant having more than 2 years of post fellowship experience.

At the time of delivery the outcome were noted in terms of mode of delivery (Cesarean/SVD), transfer of the baby to the neonatal intensive care unit (NICU) and demographics like age, gestational age and dose of PGE2 were entered in the proforma attached as annexure.

The collected data was analyzed through SPSS version 19.0. Frequencies and percentages were presented for mode of delivery (Cesarean/SVD), History of Diabetic Mellitus & history of hypertension (HTN), transfer of the baby to the neonatal ward and dose of PGE2. Mean and standard deviation was calculated for age, Weight, height, BMI and gestational age respectively. Effect modifiers were controlled through stratification like age, gestational age, weight, height, BMI and dose of PGE2 to see the effects on outcome of induction of labour through stratification. Chi square test were applied after stratification and significance level were less than or equal to 0.05.

## RESULTS

SOut of the 100 women enrolled in this study, mean age of the patients was 26.9±3.9. Patients with age ≤ 25 years were 41 % and >25 years were 59%. Mean height of the participants were 1.58±0.1 and weight were 76.4±11.8. Body mass index of the patient were 30.4±4.5. Mean gestational age of the patients was 38.9±1.1 weeks. (Table No 1)

Table 1: The Mean and frequency distribution of induction of labor in nulliparous women.(n=100)

| Variable | | n(%) |
|---|---|---|
| Age(years) | Mean±SD | 26.9±3.9 |
| ≤ 25 | | 41(41.0) |
| >25 | | 59(59.0) |
| Height (cm) | Mean±SD | 1.58±0.1 |
| ≤ 1.55 | | 30(30.0) |
| > 1.55 | | 70(70.0) |
| Weight (Kg) | Mean±SD | 76.4±11.8 |
| ≤ 75 | | 49(49.0) |
| >75 | | 51(51.0) |
| Body Mass Index(BMI) | Mean±SD | 30.4±4.5 |
| ≤ 30.5 | | 57(57.0) |
| >30.5 | | 43(43.0) |
| Gestational age(weeks) | Mean±SD | 38.9±1.1 |
| ≤ 38 | | 43(43.0) |
| >38 | | 57(57.0) |

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Out of 100 women 53% had LSCS while 47% women were delivered normally. Only one patient had HTN and DM. seventy three percent women have 3 mg doses of PGE 2 while 27% had 6mg. Not any transfer baby to NICU. (Table I)

Regarding MOD, observed that the women with > 25 years of age had 61%LSCS while ≤ 25 years women 59% delivered normally (SVD) (P value 0.042).Women with higher weight 59% had LSCS and ≤ 75 kgs weight had normal delivery. Similar trend showed in higher BMI >30.5 participant56% had LSCS. Increasing the doses of PGE2 6mg has increasing the risk (78%) of LSCS. (Table II)

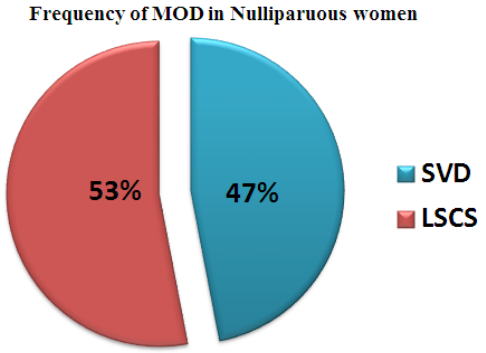


Figure 1: Frequency of Mode of delivery in nulliparous women N=100

Stratification analysis was performed and observed that statistically significant association in MOD in nulliparous women with age and dose of PGE2. (P value 0.0042, 0.002) as shown in table II.

MOD of delivery in nulliparous women was not associated with height weight BMI gestational age and baby NICU admission. (Table II).

Table 2: Stratification analysis of MOD in induction of labour nulliparous women. (n=100)

| Characteristic | Medical Management Success | | P value |
|---|---|---|---|
| | SVD n (%) | Cesarean n (%) | |
| Maternal age(years) | | | |
| ≤ 25 | 24(58.5) | 17(41.5) | 0.042 |
| >25 | 23(39.0) | 36(61.0) | |
| Weight | | | |
| ≤ 75 | 26(53.1) | 23(46.9) | 0.161 |
| >75 | 21(41.2) | 30(58.8) | |
| Hight | | | |
| ≤ 1.55 | 11(36.7) | 19(63.3) | 0.128 |
| > 1.55 | 36(51.4) | 34(48.6) | |
| BMI | | | |
| ≤ 30.5 | 28(49.1) | 29(50.9) | 0.387 |
| >30.5 | 19(44.2) | 24(55.8) | |
| Gestational age (weeks) | | | |
| ≤ 38 | 22(51.2) | 21(48.8) | 0.301 |
| >38 | 25(43.9) | 32(56.1) | |
| Dose of PGE2 | | | |
| 3 mg | 41(56.2) | 32(43.8) | 0.002 |
| 6 mg | 6(22.2) | 21(77.8) | |
| Baby NICU admission | | | |
| No | 47(47.0) | 53(53.0) | P value not computed |
| Yes | 0(0.0) | 0(0.0) | |

## DISCUSSION

Women over the age of 25 who choose to be induced into labour at term (at least 37 weeks' gestation) have an increased risk of caesarean birth, according to our data,

while 58% of women under the age of 25 who were induced into labour had their babies vaginally.

Cesarean delivery is more likely if a woman is beyond 38 weeks pregnant, which suggests that induction before 38 weeks has better results in terms of delivery style than induction after 38 weeks. Even after 37 weeks' gestation, several studies have found that caesarean birth is related with a higher risk of obstetric intervention, particularly elective induction of labour.

Nulliparous patients were 4.6 times more likely than their multiparous counterparts to have a failed induction. An increased risk of caesarean delivery, particularly in nulliparity, has been linked to induction in numerous studies [11-12].

The moms' height, weight, or BMI had no effect on their delivery method. The amount of PGE2 used in the experiment was also an essential factor that was uncovered. Those who received a low amount of prostaglandins responded effectively, whereas those who received a large dose of 6 mg delivered their kids via caesarean section. PGE2 was more successful at maturing the cervix and making it suitable for vaginal delivery when used at lower doses.

Induction of labour between 37 and 41 weeks has the potential to enhance neonatal outcomes, as one study shows that perinatal mortality and foetal compromise rise with increasing gestation [13].

Induction of labour at either maternal age or gestational age was not associated with infant mortality or illness that necessitated additional management and treatment in the neonatal intensive care unit.

Intracervical Foleys balloon, prostaglandin E2, and I/V Oxytocin have all been advised for inducing labour. For cervical ripening, we used an intracervical Foleys balloon, followed by prostaglandin E2, ARM, and intravenous oxytocin at our facility. Prostaglandins and cytokines are released when the cervix is mechanically dilated, which disrupts collagen and induces local inflammation. For cervical ripening, the use of a Foleys catheter is both safe and effective [14].

It wasn't possible to compare different techniques of inducing labour in this study. Induction of labour in nulliparous women should be addressed with caution due to the greatly greater risk of caesarean birth. It's especially important if the cervix is unfavourable and the indication is either elective in nature or marginally recommended. Women with a poor obstetric history may not be allowed to go past 40 weeks, which results in an unfavourable cervix at the time of labour induction. Caesarean sections are routinely performed by both the doctor and the patient. A known risk factor is the length of induction. There is a direct correlation between an induction's length and its risk, with shorter inductions resulting in lower risks and longer ones resulting in higher risks [15].

## CONCLUSION

Elective induction of labour at term gestation can reduce perinatal mortality and morbidity in Pakistan with increasing the risk of operative delivery.

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