

INCEDENCE OF CESAREAN SECTION WITH INDUCTION IN PASTDATES AMONG PRIMIGRAVIDA AT TERM

Dr. B. Balaji Naik^{1*}, Dr. Sreelatha. K², Dr. Bukke Sandya³

¹Assistant Professors, Department of Obstetrics &Gynecology, S. V. Medical College, Tirupati, Andhra Pradesh, India

²Assistant Professor, Department of OBG, Sri Venkateswaraa Medical College, Tirupati, Andhra Pradesh, India

³Assistant Professor, Department of OBG, Sri Venkateswaraa Medical College, Tirupati, Andhra Pradesh, India

***Corresponding author: Dr. B. Balaji Naik**, Assistant Professors, Department of Obstetrics &Gynecology, S. V. Medical College, Tirupati, Andhra Pradesh, India

ABSTRACT

Objectives: To study indications and methods of induction in primigravida with pastdates; To study the risk of operative delivery in induced labor in primigravida with pastdates.

Methods: 100 Primiporous women between >41 weeks of gestation with live singleton fetus in cephalic presentation in whom labor was induced were included in the study group after considering the inclusion and exclusion criteria. Delivery and outcome were analysed and compared with women who went into labor spontaneously. The rate of cesarean delivery in both groups was compared.

Results: In the present study, method of induction was by using Dinoprost gel, Misoprostol, Oxytocin with or without artificial rupture of membranes out of 100 cases 64% had LSCS and 4% had outlet forceps and 32% had vaginal delivery and whereas out of 100 spontaneous group 12% had LSCS and 2% had outlet forceps and 86% had vaginal delivery. The risk of LSCS is significantly higher in cases than in controls as $p < 0.001$.

Conclusion: In primigravida with induction of labor is associated with significantly increased risk of cesarean delivery, maternal morbidity and neonatal morbidity.

Keywords: Cesarean section, Labor induction, Maternal morbidity and Neonatal morbidity

INTRODUCTION

Labor induction implies stimulation of contractions before the spontaneous onset of labor, with or without ruptured membranes. Induction is indicated when the benefits to either mother or fetus outweigh those of continuing the pregnancy. Immediate indications include premature rupture of membranes with chorioamnionitis or severe preeclampsia. Common indications include premature rupture of membranes, gestational hypertension, non reassuring fetal heart rate, postdated pregnancy and various medical conditions such as chronic hypertension and diabetes¹.

Elective labor induction refers to those done with no clear medical reason. Medically indicated induction is when there is clear medical benefit to either mother or fetus from terminating the pregnancy rather than continuing it. Medical indications for induction of labour are premature rupture of membrane, pregnancy induced hypertension or preeclampsia, chorioamnionitis, maternal medical problems such as diabetes mellitus with pregnancy at term².

Factors that initiate and promote labour are complex. Oxytocin receptors in the uterus increase 300 fold at parturition. Duration of labor is more affected by parity and cervical status at the onset of labor. A cervical scoring system, the Bishop score has been developed for assessing cervix at the time of induction³.

Labor inductions are an option when the benefits of birth outweigh the risks of continuing the pregnancy and they must be weighed against the potential maternal and fetal risks.

Women with uncomplicated pregnancies should usually be offered induction of labour between 41 and 42 wks to avoid the risks of prolonged pregnancy⁴.

Aims and Objectives

MATERIALS AND METHODS

This study was Prospective study conducted on women admitted at **Government Maternity Hospital, Tirupathi**. Nulliparous women between 37 to 42 weeks of gestation with live singleton fetus in cephalic presentation in whom labor was induced were included in the study group after considering the inclusion and exclusion criteria.

Informed consent was obtained. All the patients were evaluated for gestational age, clinical pelvimetry done. Preinduction Bishop's score, method of induction, course of labor, delivery and outcome were analysed and compared with women who went into labor spontaneously. The indications for induction were chartered out. The rate of cesarean delivery in both groups was compared.

Labour was induced with intracervical application of dinoprost gel (PGE₂), oxytocin with or without artificial rupture of membranes and misoprostol 25ug.

Frequency of uterine contractions were evaluated clinically by abdominal palpation. Fetal heart monitoring was also done.

Inclusion criteria

- Nulliparous women
- Term gestation
- Singleton pregnancy
- Cephalic presentation
- Live fetus

Exclusion criteria

- Fetal macrosomia
- Multifetal gestation
- Anamolous baby
- Malpresentation
- Intra uterine fetal death
- Contracted pelvis
- Eclampsia
- Placenta previa

- Abruptio placentae
- Active genital herpes infection
- Cervical cancer
- Meconium stained liquor
- Cardiac disease in pregnancy

Plan for data analysis: statistical analysis is done by using MS Excel 2007 Epi 3.5.3 software.

RESULTS

Table: 1 Age distribution in study group

Age	Study group	
	Frequency	Percentage
Below 20	7	7
20 - 24	30	30
25 - 29	61	61
Above 30	2	2
TOTAL	100	100

Majority of women in the study group were between age group of 22-24.

Table: 2 Bishop's Score at Induction

Bishop Score	Study group	
	Frequency	Percentage
0-4	30	(30%)
4-8	70	(70%)
>8	0	0%
Total	549	(100%)

Majority of the women who were induced were with Bishop score of 4-8.

Table: 3 Method of Induction

Method of Induction	study group	
	Frequency	percentage
Oxytocin	50	50%
Misoprostol	2	2%
Dianoprost	48	48%
Total	100	100

Majority of the women in the study group were induced with Oxytocin(50%) followed by dianoprost(48%).

Table: 4 Indication for cesarean section in the study group

Indication	Study group
	Frequency
Failed progression	55
Foetal distress	9

Failed progression was seen in 55% followed by Foetal distress 9% in the study group.

Table: 5 Complications in study group

Complications	Study group
Prolonged labor	30%
PPH	5%

There were 30% cases of prolonged labor and 5% cases of PPH.

Table 6. Age distribution

Group	N	Mean	Std. Deviation	
Study group	549	22.68	2.858	t= 0.934 p=0.351
Spontaneous group	549	22.64	2.854	

Age group in study group is 22.68 yrs where as it was 22.64 yrs in spontaneous group. The difference between study group and control was found to be statically not significant ; p is greater than 0.05 level.

Table 7: Birth Weight

Birth Weight	N	Mean	Std. Deviation	t-value
Study group	549	2.970	1.49097	t =1.697 [@] p=0.090
Spontaneous group	549	2.868	0.42953	

Mean birth weight in study group is 2.970 kgs where as it was 2.868 kgs in Spontaneous group. The difference between study group and spontaneous group was found to be stastically not significant p is greater than 0.01 level.

Table 8: Delivery Outcome

	Study group	Spontaneous group
Vaginal delivery	32	86
Instrumental delivery	4	2
lscs	64	12

The rate of LSCS in induced group is 64% where as it was 12% in spontaneous group. The risk of LSCS is significantly higher in study group than in spontaneous group and is stastically significant $p < .001$.

Table 9: Indications for caesarean section

Indication	Group	
	Study group (n=100)	Spontaneous group (n=100)
Failed progression	55	9
Foetal distress	10	2

Failed progression was seen in 55 and foetal distress in 10. where as in spontaneous group failed progression was 9% and foetal distress 2%.

Table 10: Duration of Labour

Group	N	Mean	Std. Deviation	t-value
Study group	549	18.16	11.417	t=25.751** p=0.000
Spontaneous group	549	5.54	2.563	

Duration of labor is found to be more in the study group with mean 18.16hrs and in spontaneous group it was 5.54hrs, the difference is found to be stastically significant at 0.01 level. p is less than 0.01 level.

Table: 11 Duration of Hospital Stay

Group	N	Mean	Std. Deviation	t-value
Study group	549	4.78	3.161	t=14.007** p=0.000
Spontaneous group	549	2.7	1.567	

Duration of hospital stay is found to be more in study group with mean value 4.78 days and in spontaneous group it was 2.7days. The difference is found to be statically significant at 0.01 level p is less than 0.01 level.

DISCUSSION

The present study included 100 nulliparous women with pastdates admitted at Govt. Maternity Hospital Tirupati. In whom labor was induced.

In the present study there were 16% women in the study group with bishop score < 5.

In the study by peregrine E, O'Brien P, Omar R et al⁵ the current standard for predicting outcome of induction of labor remains the bishop score. Bishop score ≤ 5 is the predominant clinical risk factor.

In the study by Vrouenrates et al⁶ reported that bishop score of 5 or less was predominant risk factor for cesarean delivery.

In The study by Johnson DP and colleagues⁷, among 2647 (36.3%) patients who underwent induction, the cesarean delivery rate was 31.5% among patients whose bishop score was < 5 at induction versus 18.1% for patients with a score ≥ 5 .

In our study group, indications for induction were, Postdated pregnancy.

In the study by American college of obstetricians and Gynecologists¹, common indications included premature rupture of membranes, gestational hypertension, non reassuring fetal status, postdated pregnancy and various medical conditions such as chronic hypertension and diabetes.

In the study by Seyb ST and colleagues⁸, indications for medical induction of labor are gestational age ≥ 41 week, premature rupture of membranes, fetal growth restriction, preeclampsia, (blood pressure $\geq 140/90$ mmHg and $\geq 1+$ proteinuria), chronic hypertension, non reassuring fetal surveillance (non reactive stress test or amniotic fluid index <5), diabetes mellitus. Focusing on the risk of elective induction, most of the studies did not discriminate between medical and elective indications for induction of labor and even categorized patients induced for postdated as elective induction.

In the present study, method of induction was by using Dinoprost gel, Misoprostol, Oxytocin with or without artificial rupture of membranes out of 100 cases 64% had LSCS and 4% had outlet forceps and 32% had vaginal delivery and whereas out of 100 controls 12% had LSCS and 2% had outlet forceps and 86% had vaginal delivery. The risk of LSCS is significantly higher in cases than in controls as $p < 0.001$.

In our study the rate of cesarean section in nulliparous women with induction was 64% and in women with spontaneous labor it was 12%. The risk of LSCS is significantly higher in study group than in spontaneous group as $p < 0.001$.

In the study by yeast et al⁹, 197 nulliparous who underwent elective induction had cesarean delivery rate of 16.2%, compared with 7.9% among 4086 nulliparous who labored spontaneously.

In the study Seyb ST and colleagues⁸ concluded that women experiencing spontaneous labor had 7.8% cesarean delivery rate whereas women undergoing elective labor induction had 17.5% cesarean delivery rate and women undergoing medically indicated labor induction had 17.7% cesarean delivery rate.

In the study by Peregrine, O'Brien P, Omar R et al⁵, both medically indicated and elective indications are associated with increased risk of cesarean delivery particularly in nulliparous women who have overall 2.2 fold higher risk than women presenting in spontaneous labor.

In the study by Johnson DP and Colleagues⁷, among 4635 women (63.7%) in spontaneous labor, the cesarean delivery rate was 11.5% versus 23.7% in induced labor.

In our study indications for cesarean section were mostly failed progression 30 % and foetal distress 9.8% and where as it was 4 % and 2.1% respectively in the primigravida who delivered spontaneously.

Vahratian et al¹⁰, in their study concluded that elective induction in nulliparous women with an unfavourable cervix has a high rate of labor arrest and substantially increased risk of cesarean delivery. They had significantly longer latent and early active phase and 2 to 3 fold increased risk of cesarean delivery compared with those with spontaneous onset of labor.

In the present study duration of labor is found to be more in the study group with mean 18.16 hrs and in spontaneous group it was 5.54 hrs. The difference is found to be statically significant at 0.01 level. p is less than 0.01 level.

In the study by Seyb ST and colleagues⁸, the most common indication for cesarean delivery was dystocia. Induction of labor required significantly more time on labor.

In the study by Peregrine, O'Brien P, Omar R et al⁵, cesarean delivery was performed for failure to progress in labor, fetal distress on cardiotocograph, failed induction of labor.

In the present study, total hospital stay for nulliparous women undergoing induction was 3 times higher than what is required for nulliparous women in spontaneous labor.

Alexander JM and colleagues¹¹, in their study concluded that admission to delivery was longer (5.7 compared with 11.1 hours) and more likely to extend beyond 10 hours in induction group.

Simon CE Grobman WA¹² observed that among a total of 397 nulliparous women, 32% of whom who underwent cervical ripening, only 8 women (2%) never achieved active phase of labor before cesarean and overall cesarean rate was 26%. A longer latent phase was

associated with greater rate of cesarean delivery, although only after 18 hrs did a majority of induced labor result in cesarean.

In the current study, there were prolonged labor 30%, PPH 5% in the induced group.

Cunningham and co-workers studied that maternal complication rates that are increased in association with labor induction include cesarean delivery, chorioamnionitis and uterine atony. chorioamnionitis and postpartum haemorrhage were more frequent with latent phases of labor greater than 18 hrs.

Mercer BM¹³ in his study documented that labor induction may be complicated by uterine tachysystole, uterine hyperstimulation with fetal heart rate abnormalities or fetal distress, prolonged labor, prolonged membrane rupture and chorioamnionitis.

CONCLUSION

In nulliparous women with induction of labor is associated with significantly increased risk of cesarean delivery, maternal morbidity and neonatal morbidity. The decision to undertake induction of labor needs to be clear and clinically justified. This helps in reducing primary cesarean delivery rate among nulliparous women.

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Nil

CONFLICT OF INTEREST

None

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