Induced Labor Versus Spontaneous onset of Labor in a Primigravida beyond 40 Weeks Gestation

Saniyah Khan Galzie[1], Smitha B. Rao[2]

ABSTRACT

Introduction: Two major approaches have been employed in management of uncomplicated post term pregnancies: elective induction of labor at 41-42 weeks, and expectant management with intermittent fetal monitoring (e.g. cardiotocography, biophysical profile)and selective induction of labor. This study was undertaken to compare the maternal and fetal outcome in induced labor versus spontaneous onset of labor in a primigravida, beyond 40 weeks gestation in order to help in formulating evidence based protocol in case of primigravidas beyond 40 weeks gestation.

Material and methods: A Retrospective observational study was conducted between May 2018 and January 2019. Primigravidae of 40 -0/7 to 6/7 weeks gestation and uncomplicated pregnancy were studied and divided into 2 groups, those with induction of labor and those with spontaneous onset of labor. Relevant data; method of induction, mode of delivery, indication of cesarean section, duration of first stage of labor, maternal and fetal complications, were collected from the patient records and compared.

Results: Among the 91 participants, 44 had spontaneous onset of labor and 47 underwent induction of labor. The mean duration of first stage was 6.47 hrs in the induced labor group, and 5.93 hrs in the spontaneous onset group. The rate of caesarean section was 11.4% in the spontaneous onset of labor group and 34% in the induced labor group, (P<0.032).

Conclusion: It is prudent to wait for spontaneous onset of labor in a primigravida till 41 weeks, since induction of labor was associated with higher caesarean rates in induced group.

Keywords: labor Induction, Post-Term Pregnanc, Primigravida, Spontaneous Labor

INTRODUCTION

Full term pregnancy occurs between 39 0/7 weeks and 40 6/7 weeks. Late term gestation is defined as one occurring between 41 0/7 and 41 6/7 weeks, while post term gestations extend to 42 0/7 weeks and beyond.[1]

The risk of stillbirth increases beyond 41 weeks.[2] Oligohydramnios is more common in post term pregnancies and has been associated with cord compression, fetal heart rate abnormalities, meconium-stained amniotic fluid, and fetal acidosis. Mannino F et al[3] also observed in their study that the still birth rate is lowest at 40 weeks and gradually increases as pregnancy advances. Maternal risks are those associated with macrosomia and related dysfunctional labors, including severe perineal lacerations, infections, and postpartum hemorrhage.

With the risk associated with pregnancies extending beyond 41 weeks, it is prudent to induce labor, once the gestation crosses 40 weeks to lessen the maternal morbidity as well as perinatal morbidity and mortality . At 40 weeks' gestation, elective induction of labor can lessen the likelihood of perinatal mortality without increasing the need for cesarean delivery. In addition, elective induction at weeks 40 or 41 is not associated with an increase in caesarean delivery.[4] However, some studies have suggested a link between elective induction and subsequent interventions such as cesarean delivery.[5]

The management of post term uncomplicated pregnancies is controversial. Two major approaches have been employed: elective induction of labor at 41-42 weeks, and expectant management with intermittent fetal monitoring (e.g. cardiotocography, biophysical profile)and selective induction of labor.[6]

This study is being undertaken to compare the maternal and fetal outcome in induced labor versus spontaneous onset of labor in a primigravida, beyond 40 weeks gestation in order to help in formulating evidenced based protocol in case of primigravidas in whom pregnancy extends beyond 40 weeks.

MATERIAL AND METHODS

Retrospective observational time based study was conducted between May 2018 to January 2019 in the Department of Obstetrics and Gynaecology at Yenepoya Medical College after receiving ethical clearance by the institutional ethics committee. A total of 91 participants were included in the study. These were divided into 2 groups. Those who had spontaneous onset of labor (44), and those in whom labor was induced(47).

Inclusion criteria:

1) All primigravida with singleton pregnancy
2) Without pregnancy associated complications,
3) Without any medical high risk
4) Gestational age >/= 40 weeks 0/7 days – 6/7 days
5) Irrespective of their registration status (patients who were referred at the time of delivery and those registered

[1]Medical Officer. L.D.Hospital, Department of Obstetrics and Gynaecology, [2]Consultant Obstetrician and Gynaecologist, Department of Obstetrics and Gynaecology, Yenepoya Medical College, India

Corresponding author: Dr. Saniyah Khan Galzie, Grey Stone, Rajbagh, Srinagar, J&K, 190001, India

How to cite this article: Khan GS, Rao SB. Induced labor versus spontaneous onset of labor in a primigravida beyond 40 weeks gestation. International Journal of Contemporary Medical Research 2021;8(8):H1-H4.

DOI: http://dx.doi.org/10.21276/ijcmr.2021.8.8.2

in the antenatal period) were included.

Exclusion criteria

1) Malpresentation
2) Multiple pregnancies
3) Premature rupture of membranes (PROM)
4) Oligohydramnios (AFI </=5)
5) Any surgical high risk

In this study, primigravida of 40 -0/7 to 6/7 weeks gestational age were divided into 2 groups, those who underwent induction of labor and those who had spontaneous onset of labor. Relevant antenatal, intranatal data, method of induction, modified bishops score, details regarding augmentation of labor and method used for augmentation of labor were documented. mode of delivery, indication of cesarean section, duration of first stage of labor, induction delivery interval, maternal complications, fetal outcome and perinatal complications, were collected from the patient records and studied in both the groups.

Methods of induction

- Foleys balloon catheter
- Dinoprostone gel/PGE2 (0.5mg) intracervical (maximum upto 3 doses)
- Foleys followed by Dinoprostone gel/PGE2(0.5mg) intracervical
- Oxytocin induction (5mIU/min and titrated according to adequacy of contractions)
- Tab misoprostol 25 microgram per vaginal/ 50 microgram per oral
- Foleys followed by oxytocin

Indications of caesarean section

- Fetal distress
- Secondary arrest of dilatation
- 2nd stage arrest of descent of head
- Meconium stained liqour

RESULTS

Total study participants were 91 as per data collected from may 2018 to January 2019, in the age group 18 to 25 yrs, with gestational age 40 0/7 to 40 6/7 weeks. Among these 44 had spontaneous onset of labor and 47 underwent induction of labor. The results were compared in both the induction of labor group and spontaneous onset of labor group.

Among the induced group, 23.1% had undergone foleys induction which was the most common mode of induction (table-1).

90.9% of the participants had favourable modified bishop score in the spontaneous group and 95.7% of the participants had favourable modified bishop score at the time of reassessment post induction (table-2).

The mean duration of first stage was slightly more in the induced labor group, being 6.47hrs, whereas it was 5.93 hrs in the spontaneous onset group (table-3).

The rate of caesarean section was 11.4% in the spontaneous onset of labor group and 34% in the induced labor group, with $P = 0.032$, which was significant (table-4).

The most common indication of caesarean section in spontaneous onset of labor was fetal distress (60%) and secondary arrest of dilatation in the induced labor group, (50%) (table-5).

Though maternal complications were slightly more in the induced group, however it was not statistically significant. Atonic PPH, which required blood transfusion was the most common complication in both the groups (table-6).

There was no significant difference in the rate of fetal complications in both the groups (table-7).

DISCUSSION

The present study was primarily aimed at formulating a protocol by comparing induction of labor with spontaneous onset of labor in a primigravida beyond 40 weeks gestation. With the availability of various methods of induction,

Spontaneous onset of labor	44	48.4%
Induced labor	47	51.6%
Methods of induction		
Foleys	21	23.1%
Foleys followed by oxytocin	9	9.9%
Foleys followed by PGE2	7	7.7%
Oxytocin	3	3.3%
PGE2 gel	5	5.5%
Misoprostol 50mcg PO	1	1.1%
Misoprostol 25 mcg PV	1	1.1%
Total	91	100.0%

Table-1: Number of participants who had spontaneous onset of labor and induced labor along with various methods of induction of labor .

Modified Bishop score /calder score	Spontaneous onset	%	At the time of induction	%	At the time of Reassessment of induction	%
0-3	0	0%	30	63.8%	0	0%
4-5	4	9.1%	14	29.8%	2	4.3%
>/= 6	40	90.9%	3	6.4%	45	95.7%
Total	44	100%	47	100%	47	100%

Table-2: Modified bishop score of the participants who had spontaneous labor and those who had induced labor

Onset of labor	Number	Mean duration of first stage
Spontaneous labor	39 (Rest underwent LSCS)	5.93 hrs
Induced labor	31(Rest underwent LSCS)	6.47 hrs

Table-3: Duration of first stage in both the groups.

Mode of delivery	Spontaneous onset	%	Induced	%	P value
LSCS	5	11.4%	16	34.0%	
Instrumental delivery	4	9.1%	2	4.3%	
Normal delivery	35	79.5%	29	61.7%	
Total	44	100.0%	47	100.0%	0.032

Table-4: Mode of delivery

Indication	Spontaneous	%	Induced	%
Fetal distress	3	60.0%	4	25.0%
Secondary arrest of dilatation	1	20.7%	8	50%
Arrest of descent of head (2nd stage)	1	20.7%	1	6.3%
Meconium stained liquor	0	0%	3	18.8%
Total	5	100.0%	16	100.0%

Table-5: Indication of caesarean section

Maternal complication	Spontaneous	%	Induced	%	P value
Atonic pph, blood transfusion	2	4.6%	4	8.5%	
Need for additional uterotonics in 3rd stage	1	2.3%	2	4.3%	
Vaginal laceration	1	2.3%	0	.0%	
Cervical tear	0	.0%	1	2.1%	
Puerperal sepsis	2	4.5%	2	4.3%	
Episiotomy wound gaping	1	2.3%	0	.0%	
No complications	37	84.1%	38	80.9%	
Total	44	100%	47	100%	0.685

Table-6: Maternal complications

Fetal outcome	Spontaneous	%	Induced	%	P value
RDS	0	.0%	3	6.4%	
NICU for observation	1	2.3%	2	4.3%	
SIRS	9	20.5%	4	8.5%	
Hyperbilirubinemia	7	15.9%	9	19.1%	
Healthy	27	61.4%	29	61.7%	
Total	44	100%	47	100%	0.241

Table 7: Fetal complications

whether to induce primigravidas or wait for spontaneous onset of labor even beyond their EDD remains a dilemma for most obstetricians. This study aims to find out the better of the two options, which enables a vaginal delivery along with best maternal and fetal prognosis.

The study comprises of 91 participants, of which 44 had spontaneous onset of labor and 47 underwent induction of labor.

The rate of induction of labor in pregnancies that continue beyond the EDD is higher and varies from 20-40%. In our study the rate of induction was 51.6%. Study by Chaudhari et al.[7] showed 38%.

In our study, the duration of first stage of labor was shorter in the group with spontaneous onset of labor. However, in the study conducted by S. Babu et al[8], the duration of first stage was similar in spontaneous (6.85 hrs) as well as induced labor (6.65hrs). Also, in the study conducted by P.yadav et al[9], the mean duration of labour after 4cm of cervical dilation in spontaneous labour onset group was 5.43 hours and in the induced group was 5.41 hours with p value0.865, which was statistically not significant

In our study the rate of caesarean section was higher in the induction of labor group (34%) than the spontaneous onset of labor group(11.4%). This was similar to the study conducted by Thangarajah et al.[4] who found that within the subgroup of primiparous women, there was higher risk of cesarean delivery in the induction of labor (IOL) group. However Runa et al.[8] found that there was no difference between the study groups in the rate of cesarean delivery (28 and 33 in the induction and monitoring group, respectively.

Vahratian A. et al[9], however found that the rate of caesarean section was linked to low bishop score, women who had an elective induction with cervical ripening had 3.5 times the risk of cesarean delivery during the first stage of labor (95% confidence interval 2.7-4.5). In our study the modified bishop score of 93.6% participants in the induced group was low ie <6 , and thus required cervical priming; whereas it was only 9.1% in the spontaneous onset of labor group. The caesarean section rates were almost 3 times more in the induced group in our study.

In our study, the rate of caesarean section was more in induced group and the most common indication for caesarean section

in the spontaneous onset of labor group was fetal distress whereas in the induced labor group the most common indication for caesarean section was secondary arrest of labor in first stage. Cammu H et al.[10] also found higher caesarean section rate in the induced group and attributed the higher rate to significantly more first-stage dystocia in the induced group.

Runa et al.[10] also found no significant difference between operative vaginal delivery between induced labor group and group with expectant management. (32 compared with 27, P.49). Cammu H et al.[12] did a study and found that instrumental delivery was more in induced rather than spontaneous onset of labor group, (31.6% vs 29.1%), however it was not significant. In our study, instrumental delivery was more in the spontaneous onset of labor group, 9.1% than induced labor group, 4.3%.

In our study the maternal and fetal outcome was same in both the groups which was similar to the study conducted by Thangarajah et al.[4] who found that in primi parous women, the rate of lacerations did not differ between the two groups. Also, they did not found any significant difference between maternal and perinatal outcome in the two groups. S.Babu et al[8], found atonic PPH as the most common complication in induced labor group, whereas atonic PPH, perineal tear, and vaginal tear as the most common complication in the spontaneous labor group. However, there was no statistically significant increased risk of complications between the groups. Also, P. Yadav et al.[9] found similar maternal complications rate and neonatal outcome in both the groups, however PPH was more common in induced labor group. Study conducted by Glantz et al.[13], found no difference in perinatal outcome between the mode of onset of labor. Same was true in the study conducted by S. Babu et al.[8] who found no difference in the perinatal; outcome in both the groups. In a study conducted by Singh s et al.[14] found the rate of NICU admissions to be more than 3 times higher in pregnancies that prolonged beyond 41 weeks. This emphasizes that the perinatal outcome depends on the gestational age at the time of delivery rather than the mode of onset of labor.

However larger studies on advanced gestational age are required to further corraborate the findings of this study.

CONCLUSION

The maternal outcome in terms of mode of delivery i.e vaginal delivery was achieved in 79.5% in spontaneous onset of labor group , which was only 61.7.% in induced group and was statistically significant,($P = 0.032$).

Vaginal mode of delivery was more in the spontaneous onset of labor group, with less incidence of meconium stained liquor. The present study implies that it is prudent to wait for spontaneous onset of labor in a primigravida till 41 weeks, as it is associated with better outcome as compared to induced labor.

REFERENCES

1. American College of Obstetricians and Gynecologists. Practice bulletin no. 146: Management of late-term and postterm pregnancies. Obstetrics and gynecology. 2014 ;124:390.
2. Caughey AB, Musci TJ. Complications of term pregnancies beyond 37 weeks of gestation. Obstetrics & Gynecology. 2004;103:57-62.
3. Mannino F. Neonatal complications of postterm gestation. The Journal of reproductive medicine. 1988 ;33:271-6.
4. Thangarajah F, Scheufen P, Kirn V, Mallmann P. Induction of labour in late and postterm pregnancies and its impact on maternal and neonatal outcome. Geburtshilfe und Frauenheilkunde. 2016 ;76:793.
5. Norwitz ER, Snegovskikh VV, Caughey AB. Prolonged Pregnancy:: When Should We Intervene?. Clinical obstetrics and gynecology. 2007;50:547-57.
6. WENNERHOLM UB, Hagberg H, Brorsson B, Bergh C. Induction of labor versus expectant management for post-date pregnancy: Is there sufficient evidence for a change in clinical practice?. Acta obstetricia et gynecologica Scandinavica. 2009;88:6-17.
7. Chaudhari SN, Bhikane DB, Gupta P. A clinical study of postdated pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017;6:2077-82.
8. Babu S, Manjeera ML. Elective induction versus spontaneous labor at term: prospective study of outcome and complications. Int J Reprod Contracept Obstet Gynecol. 2017;6:4899-907.
9. Yadav P, Verma M, Harne S, Sharma M. Comparison of spontaneous labour with induced labour in nulliparous women using modified WHO partograph. Int J Reprod Contracept Obstet Gynecol. 2016;5:4005-8.
10. Heimstad R, Skogvoll E, Mattsson LÅ, Johansen OJ, Eik-Nes SH, Salvesen KÅ. Induction of labor or serial antenatal fetal monitoring in postterm pregnancy: a randomized controlled trial. Obstetrics & Gynecology. 2007;109:609-17.
11. Vahratian A, Zhang J, Troendle JF, Sciscione AC, Hoffman MK. Labor progression and risk of cesarean delivery in electively induced nulliparas. Obstetrics & Gynecology. 2005;105:698-704.
12. Cammu H, Martens G, Ruyssinck G, Amy JJ. Outcome after elective labor induction in nulliparous women: a matched cohort study. American journal of obstetrics and gynecology. 2002;186:240-4.
13. Glantz JC. Elective induction vs. spontaneous labor. J Reprod med. 2005;50:235-40.
14. Singh S, Gupta HP, Verma U, Yadav G. The study of maternal and perinatal outcome in prolonged pregnancy. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017;6:1067-70.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 30-06-2021; **Accepted:** 27-07-2021; **Published:** 30-08-2021