International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

ISSN:2347-6567

IJAMSCR |Volume 5 | Issue 2 | Apr - Jun - 2017
www.ijamscr.com

Research article *Medical research*

A study of maternal and fetal outcome in postdated pregnancy

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ABSTRACT

Objective

To assess the whether the elective induction of labor at 41 weeks is associated with lower caesarean section rates as compared to elective induction of labor at 40 weeks in a postdated pregnancy. Perinatal morbidity and mortality were also compared at 40 weeks and 41 weeks of gestation.

Participants

Labor was induced in 50 cases of postdated pregnant women at 41 weeks. 50 cases of post-dated women with labor induction at 40 weeks were taken as controls.

Main outcome measures

The primary outcome was assessed as the incidence of microsomal/low birth weight, color of liquor, incidence of MAS, NICU admission rate, APGAR score less than 7 at 5 minutes. Secondary outcome was incidence of instrumental delivery (vacuum, forceps) and LSCS.

Results

There was a minimal increase in the incidence of babies with increased birth weight (>3.6kg) in the study group (7% vs. 4%). The meconium staining of liquor is higher in the study group (65% vs. 35%). Though there was a higher rate of meconium staining of liquor and the need for amnioinfusion in the study group, the NICU admissions, Apgar of <7 at 5 minutes and the number of neonatal deaths were the same in both the groups. The LSCS rates are low (16% Vs 28%) in the study group. The rates of instrumental delivery (12%) in the study group is less compared to the control group (26%)

Conclusion

NICU admissions, APGAR score at 5 minutes and neonatal mortality is almost the same in both study and control group. Labor Induction at 41 weeks is more likely to culminate in a normal delivery as the Bishop score improves. Induction of labor in an uncomplicated low risk pregnancy at 41+ weeks of gestation is associated with reduced caesarean section rates with no adverse effect on neonatal outcome.

Keywords: Induction, Labor, Postdated pregnancy.

INTRODUCTION

Prolonged pregnancy is a term used for postdated and post term pregnancy. Post dated pregnancy is pregnancy beyond 40 weeks of gestation [1, 2]. Post term pregnancy is defined as pregnancy beyond forty-two weeks of gestation .Prolonged pregnancy carries a significant morbidity and mortality [3, 4]. So, obstetrians start planning delivery as soon as expected date of delivery (as calculated by naegle's formula) is crossed. Elective induction in a post dated pregnancy at 40+ weeks or 41+ weeks is a matter of debate [5, 6, 7].

Physiological postdates is a genetic form with a familial predisposition (8, 9, 10, 11). It does not pose a perinatal risk. A case of physiological post dates if induced result in instrumental delivery with forceps or ventouse or cesarean section. Differentiating these cases from pathological post dates by careful history taking, intensifying antenatal fetal surveillance and planning elective induction at 41 weeks can reduce the incidence of cesarean and instrumental deliveries.

As gestation advances the cervix becomes soft and chances of ripening with mechanical and medical methods is improved leading to increased chances of normal delivery. This reduces the need for forceps extraction and cesarean section. On the other side increased gestation is associated with diminishing liquor volume. Obstetricians therefore have to plan the apt time of induction after the pregnancy is postdated. We have attempted to compare the maternal and perinatal mortality when induction is planned at 40 weeks or 41 weeks.

MATERIALS AND METHODS

This prospective study was done in our teaching institute after Institutional Review Board Approval. The inclusion criteria were 15 - 44 years pregnant women with regular menstrual cycles and completed 40 weeks of gestation with singleton live pregnancy with cephalic presentation.

Patients with any medical problem such as Hypertension, Diabetes mellitus, cardiovascular disease, renal disease, obstetrical complication like PIH, GDM, BOH, Antepartum hemorrhage, PROM, multiple gestation, fetal congenital anomalies, any contraindication for vaginal delivery (previous LSCS, myomectomy, CPD, malpresentations), unreliable dates, H/o intake OCP, injectable contraceptives or any other hormonal tablets and those who did not provide consent were excluded from the study design. Gestational age was calculated based on the mother's statement of 1st day of last menstrual period and confirmed by the scan taken in the1st or early 2nd trimester. The study group comprised of Antenatal women who had completed 41 weeks of gestation. The control group comprised of Antenatal women who had completed 40 weeks of gestation. Detailed history regarding the regularity of menstrual cycle, LMP, EDD, H/o contraception, H/o of previous postdated pregnancies. H/o of postdated pregnancies in the family, H/o any medical illness affecting pregnancy were taken from all patients.

A detailed examination was performed including assessment of general condition, pulse, blood pressure, temperature, height, weight abdominal examination including measurement of symphysial fundal height, lie of fetus, presentation, estimation of amniotic fluid, EFW, fetal heart sounds, bimanual examination were done to assess the bishop's cervical score. Both groups of patients underwent USG for AFI and NST.

Induction of labor was done using either one or two doses of PGE2 gel or oxytocin according to the cervical status. Acceleration of labor was done using ARM and oxytocin infusion. The color of the liquor was noted and amino infusion given in cases of grade 2 & 3 MSL using 500 ml of NS at room temperature. FHR monitored by intermittent auscultation and progress of labor monitored using pantograph and mode of delivery decided accordingly.

The maternal outcome was studied in terms of vaginal delivery, instrumental delivery (vacuum, forceps) and LSCS and the rates were compared between the two groups. The neonatal outcome were studied in terms of color of liquor, MAS, microsomia / IUGR, NICU admission rate, APGAR score less than 7 at 5 minutes and rates compared between the two groups. Data collected were subjected to statistical analysis. Continuous variables are presented as mean $\pm$ SD; ordinal and Nominal data are presented as number and percentage. Comparison between the groups was made using student's t test for quantitative data and chi square test for qualitative data.

RESULTS

Among the 100 cases only 20 had meconium staining of liquor. 13 (65%) out of 20 belonged to the study group and 7 (35%) belonged to the control group. In the control group out of 7, 5 were grade 1, 1 was grade2, and 1 was grade 3 MSL. In the study group out of 13, 7 were grade 1, 4 were grade 2, and 2 were grade 3 MSL (Table 1& Figure 1).

Table 1: Meconium stained amniotic fluid at 40 weeks and 41 weeks

Meconium stained Liquor	40+ Weeks of Gestation		41+ Weeks of Gestation	
	No. Of cases	Percentage	No. Of cases	Percentage
Grade I	5	72	7	54
Grade II	1	14	4	31
Grade III	1	14	2	15
Total	7	100	13	100

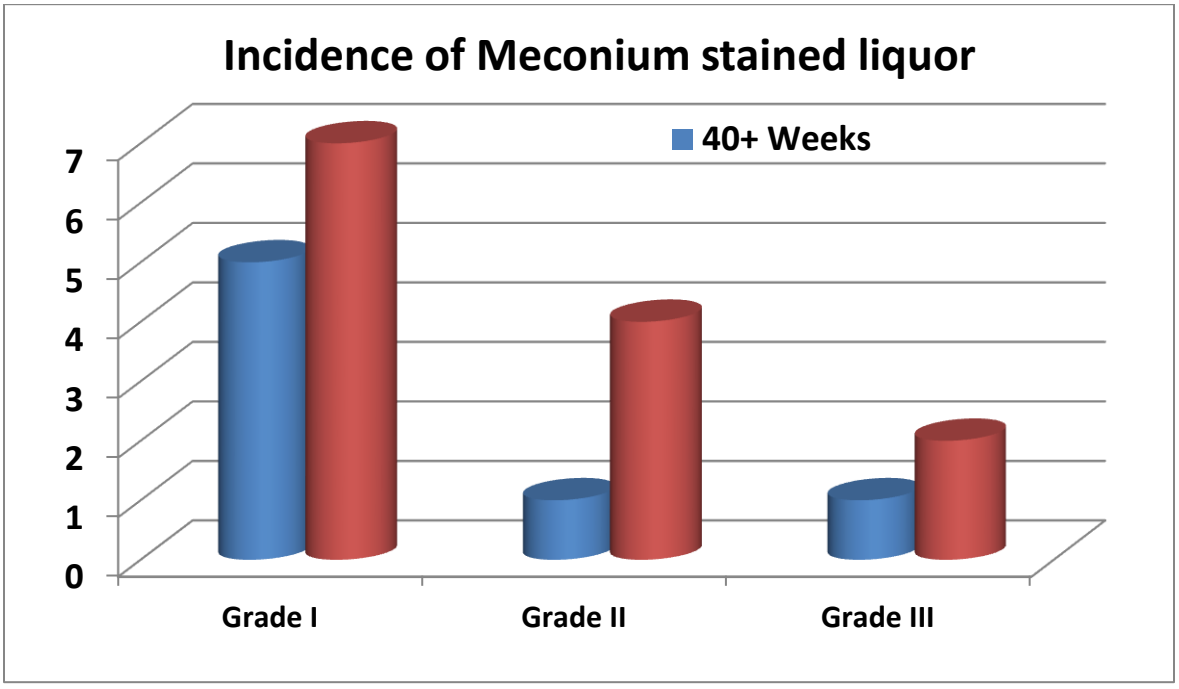


Figure 1: Meconium stained amniotic Fluid at 40 weeks and 41 weeks

Out of the 100, only 8 required amnioinfusion. 6/8 (75%) belonged to the study group and 2/8(25%) belonged to the control group .In the control group out of 50 the birth weight of 2 were between 2.1-2.5kg, 26 between 2.6-3kg, 18 between 3.1-3.5kg, 4 between 3.6-4kg. In the study group out of 50 the birth weight of 4 were between 2.1-2.5kg, 20 between 2.6-3kg, 19 between 3.1-3.5kg, 6 between 3.6-4 kg (Table 2 & Figure 2).

Table 2: Neonate birth weight at 40 weeks and 41 weeks

Birth weight (Kg)	40+ Weeks of Gestation		41+ Weeks of Gestation	
	No. Of cases	Percentage	No. Of cases	Percentage
2.1-2.5	2	4	4	8
2.6-3.0	26	52	20	40
3.1-3.5	18	36	19	38

3.6-4.0	4	8	6	12
>4	0	0	1	2
Total	50	100	50	100

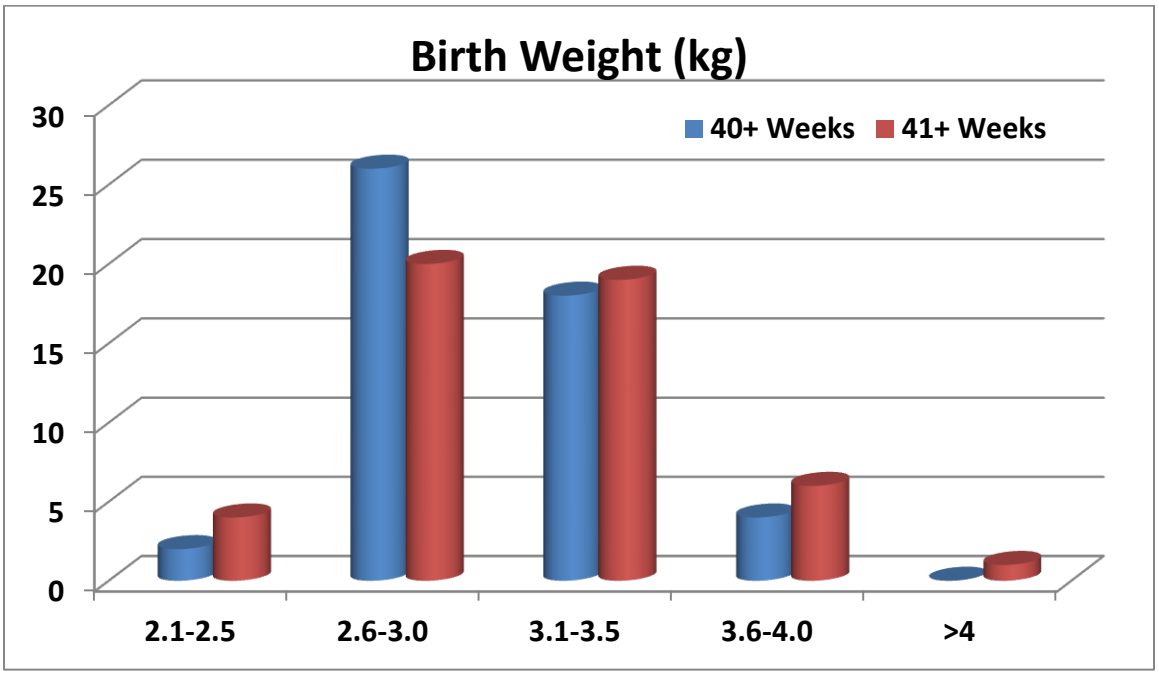


Figure 2: Neonate birth weight at 40 weeks and 41 weeks

In the control group of 50, 14 (28%) delivered by LSCS, 23(46%) by labor natural, and 13(26%) by instrumental delivery. (8 outlet forceps, 5 vacuum). In the study. Group of 50, 8(16%) delivered by LSCS, 36(72%) by labor natural and 6(12%) by instrumental delivery (4 – outlet forceps, 2 –vacuum) (Table .3 & Figure 3)

Table 3: Mode of delivery at 40 weeks and 41 weeks

Delivery	**40+ Weeks of Gestation**		**41+ Weeks of Gestation**	
	No. Of cases	**Percentage**	**No. Of cases**	**Percentage**
LSCS	14	28	8	16
NVD	23	46	36	72
Outlet	8	16	4	8
Vacuum	5	10	2	4
Total	**50**	**100**	**50**	**100**

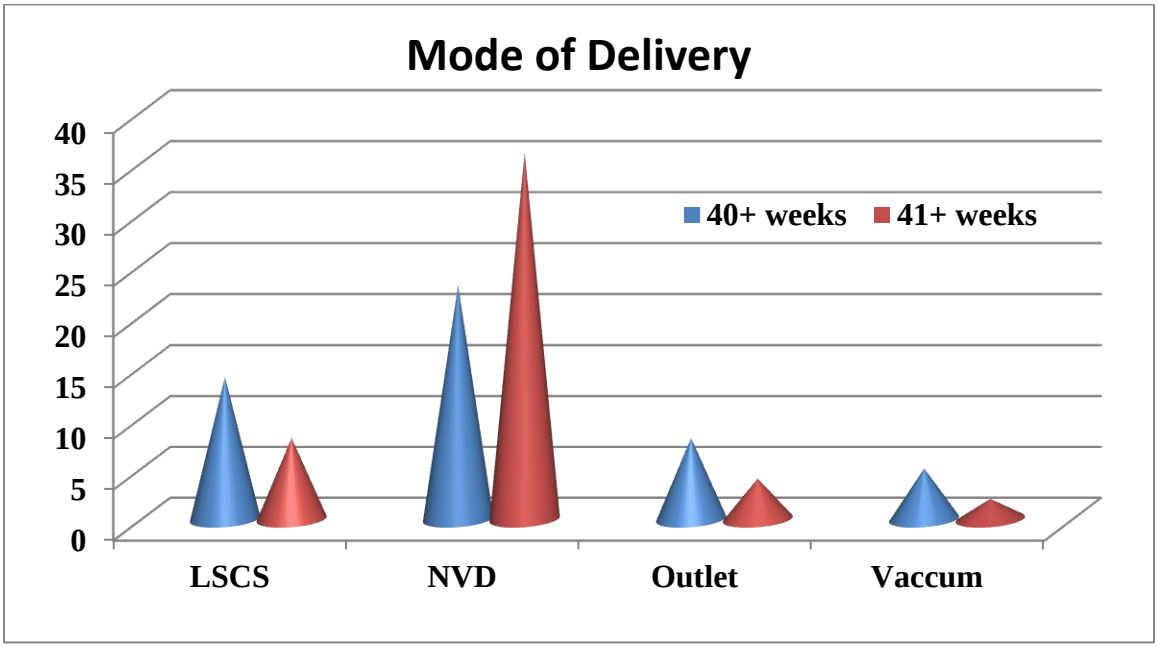


Figure 3: Mode of delivery at 40 weeks and 41 weeks

There is a significant difference in the rates of LSCS and labor natural among 40+ weeks and 41+ weeks of gestation (p=0.048). There is a significant difference in rates of instrumental delivery and labor natural among 40+ weeks of gestation and 41+ weeks of gestation. (P =0.025).

DISCUSSION

Incidence of meconium staining of Amniotic fluid in our study is comparable to earlier studies. This is not a specific indicator of fetal hypoxia, but there is good evidence that cord arterial blood pH is lower in babies who show FHR abnormalities with MSAF than in FHR abnormalities with clear liquor. Meconium stained amniotic fluid may be the result rather than the cause of fetal hypoxia as any stress increases bowel motility. From the statistical analysis induction of labor at 41 weeks decreases the LSCS rates. Perinatal outcome is not statistically significant different from those induced at 40 weeks and those induced at 41 weeks. The incidence of cesarean section and instrumental deliveries with venous and forceps and subsequent maternal and fetal morbidity can be reduced if elective induction is planned at 41+ weeks as compared to 40+ weeks. Elective induction at 41 + weeks is as safe as elective induction at 40+ weeks if fetal surveillance is continued. After 40 weeks of gestation antenatal fetal surveillance should be intensified and elective induction can be safely planned at 41 weeks. Patients with a genetic cause of postdates should be differentiated from post dates due to other causes by careful history taking. Further studies are required to differentiate physiological post dates from pathological postdates. Fetal male sex and pre pregnancy BMI has been postulated as a probable association with prolonged pregnancy in a few studies(8,11).Candidate genes responsible for postdates may be identified by gene mapping of pregnancies where familial predisposition is found [9,10,11,12].

CONCLUSION

Elective induction can be safely planned at 41 weeks in a post-dated pregnancy [13, 14, 15, 16]. NICU admissions, Apgar score at 5 minutes and neonatal mortality is almost the same in both study and control group [17]. Labor Induction at 41 weeks is more likely to culminate in a normal delivery as the Bishop score improves as gestation advances. Induction of labor in an uncomplicated low risk pregnancy at 41+ weeks of gestation is associated with reduced maternal morbidity with no adverse effect on neonatal outcome [18, 19]. Regular antenatal visits and first trimester dating scan and educating the antenatal women regarding complications associated with post dated pregnancy

are essential [3, 4, 5, 20, 21]. Aging of placenta has a strong genetic basis and the ideal time of induction should be individualized [22, 23, 24]. When dates are certain then NICE guidelines recommend that information about prolonged pregnancy is provided to all women and specifically at 38+w.At 40 - 41w nulliparous women be offered vaginal examination (VE) with membrane sweeping.At 41w parous women be offered Vaginal Examination with membrane sweeping. That all women with uncomplicated pregnancies are offered induction of labour at 41 – 42w.A policy of routine induction of labour is only applicable if dates are known with accuracy. This requires routine ultrasound to confirm dates at <16 weeks gestation. It is best practice to discuss the pros and cons of Induction of Labour with women and involve them in the decision process.

Acknowledgements : Nil

Declarations

Funding : Self-funded
Conflict of interest : Nil
Ethical approval : Approved

Consent

We have obtained the patients' consent for participation in the study

Competing interests

We do not have any commercial association that might pose a conflict of interest in connection with the manuscript. We certify that neither this manuscript nor one with substantially similar content under our authorship has been published or is being considered for publication elsewhere.

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How to cite this article: Padmalatha Dakshnamurthy, Srimathi Jagannathan, Nidhi Sharma, Kannan Rajendran. A study of maternal and fetal outcome in postdated pregnancy. Int J of Allied Med Sci and Clin Res 2017; 5(2): 600-606.

Source of Support: Nil. **Conflict of Interest:** None declared.