

Study of post dated and term pregnancy with fetomaternal outcome at RRMCH

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Abstract

Aim: To compare the maternal and fetal outcome between term and post dated pregnancies.

Methodology: Keeping in mind that the post dated pregnancy causes lot of threats to the mother and the fetus, in our hospital, labor is induced at 40 completed weeks i.e. at 40+0 weeks. In this study we tried to find out the prevalence of Post dated pregnancy (pregnancies beyond 40 weeks), it's maternal and fetal outcome and compare the same with term pregnancy (37-40 weeks).

Results: In the present study, total of 2174 cases were studied out of which 486 cases were post dated pregnancies. The incidence of post dated pregnancy was 17.36%. PRIMIs were more prone for post dated pregnancies according to our study. The 'P' value was statistically significant (p<0.001) in the following outcomes- Intra uterine fetal deaths, forceps and vacuum assisted vaginal deliveries, emergency LSCS, meconium stained liquor causing fetal distress, lower APGAR scores, admission to NICU, all were more in post dated pregnancies compared to term pregnancies with statistic significance proving the same.

Conclusion: Maternal morbidity increased in the form of emergency LSCS, postpartum hemorrhage, instrumental deliveries, as the gestational age increased beyond 40 weeks. The study also showed that there was significant increase in perinatal morbidity and perinatal mortality in the form of birth asphyxia, meconium aspiration syndrome and perinatal death as the gestational age went beyond 40 weeks. Maternal and fetal morbidity and mortality can be reduced by electively inducing pregnant women at 40+0 weeks as allowing them to continue beyond this gestational age has shown adverse fetomaternal outcomes.

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Introduction

A post-term or prolonged pregnancy is the one which extends to or beyond 42 weeks or 294 days from the first day of the L.M.P and has an incidence of 5% to 10%.⁽²⁾ A post dated pregnancy is the one which extends to or beyond 40 weeks or 280 days from the first day of the L.M.P and has an incidence of 4% to 14%.⁽¹⁰⁾

Post dated and post term pregnancies always carry a high risk, as there is a possibility of fetal distress and fetal death due to progressive fetal hypoxia following placental insufficiency.

Post-term pregnancy has been associated with an increased risk of perinatal mortality and morbidity including meconium stained liquor, meconium aspiration syndrome, oligohydramnios, macrosomia, fetal birth injury, fetal septicemia, non-reassuring fetal heart rate (NST) or fetal distress in labor and maternal complications including increased rate of cesarean delivery, cephalopelvic disproportion, cervical tear, dystocia and postpartum hemorrhage.⁽²⁾ While it is well established that these risks are increased in post term pregnancy, what is less elucidated is whether these risks increase prior to 42 weeks gestation which is what this study is all about. So, this study is to find out the maternal and fetal risk associated with pregnancy beyond 40 weeks of gestation.

Approximately 3% to 10% of all pregnancies continue till 42 weeks gestation. Advances in obstetric and neonatal care have lowered the absolute mortality risk; however, retrospective studies of these so-called

post term pregnancies have found an increased risk to the mother and fetus. The perinatal mortality (i.e., stillbirths plus neonatal deaths) of 2 to 3 deaths per 1,000 deliveries at 40 weeks gestation approximately doubles by 42 weeks and is 4 to 6 times greater at 44 weeks.⁽¹⁾

The terms post term, prolonged, Post dates and post mature are often used interchangeably to signify pregnancies that have exceeded a duration considered to be upper limit of normal. The standard internationally recommended definition of prolonged pregnancy, endorsed by the American College of Obstetrics and Gynaecologists (1997), is 42 completed weeks (294 days) or more from the first day of the last menstrual period.

'Post mature' should be used to describe the infant with recognizable clinical features indicating a pathologically prolonged pregnancy. Therefore post term or prolonged pregnancy is the preferred expression for an extended pregnancy.

(Review of Terms)

Post Dated Pregnancy- Pregnancy lasting beyond 40 wks

Post Term Pregnancy- Pregnancy lasting beyond 42 weeks)^(2,3)

ACOG has stated that it is reasonable to induce labor in post-term pregnancies in favorable conditions because the risk of failed induction and subsequent cesarean delivery is low. It has been proven that pregnancy prolongation beyond 42 weeks is an hazard for the fetus. The advent of perinatal medicine and its

access by the majority of women then reduced the rate of pregnancy reaching such a high gestational age. The rate of post-dated pregnancy has become a marker of quality of Perinatal Units, considering most deliveries occurring after 294 days have adverse outcomes. As far as policies are concerned, nothing could be concluded on the two contrasting attitudes, i.e. whether to do expectant management till 290-92 days or do elective induction of labour at 287th day. Since the evidence based medicine approach do not allow any definite conclusion regarding this aspect, the choice about when to induce should be balanced considering the orientation and the anxiety of the patient and the obstetrician.⁽⁹⁾

Risks Associated with Post-dated Pregnancy⁽¹⁾

Maternal risks	Neonatal risks
1. Emergency cesarean delivery	1. Perinatal mortality
2. Instrumental delivery-vaccum or forceps	2. septicemia
3. Cephalopelvic disproportion	3. meconium aspiration syndrome
4. Shoulder dystocia	4. macrosomia and shoulder dystocia causing nerve injury, broken bones, damaged tissues, hypoxia induced complications
5. Maternal trauma	
6. Postpartum hemorrhage	5. oligohydramnios
7. Puerperal infections	
8. Maternal mortality	

Methodology

Keeping in mind that the post dated pregnancy causes lot of threats to the mother and the fetus, in our hospital, labor is induced at 40 completed weeks i.e. at 40+0 weeks. In this study we tried to find out the prevalence of Post dated pregnancy (pregnancies beyond 40 weeks), it's maternal and fetal outcome and compare the same with term pregnancy (37-40 weeks).

Source of Data: The cases for the study were collected from the OBG department, Rajarajeswari medical college and hospital, Bengaluru, during the period between 10th November 2013 and 9th march 2015.

Method used for Induction: One cycle of vaginal PGE₂ gel: one dose, followed by a second dose after 6 hours if labour is not established and a 3rd dose after 12 hours from the first, if the labour is still not established. Failed induction has been considered when labour is not established even after 3 doses of PGE₂ gels.

Inclusion Criteria

- Antenatal cases between 37+0 weeks and 41+6 weeks of gestation, aged between 18yrs and 35 yrs.
- With regular menstrual cycles and known LMP or with first trimester scan for EDD calculation
- Singleton pregnancy with vertex presentation

Exclusion Criteria

- Chronic hypertension, pre eclampsia and eclampsia
- Pre existing or gestational diabetes mellitus
- Congenital anomalies
- Heart diseases
- Antepartum haemorrhage
- Irregular menstrual cycles and unknown LMP
- Multiple gestation
- Non-vertex presentation

Sample Size: Total of 2799 deliveries happened at RRMCH during the study period, out of which 2174 cases were included in the study groups according to inclusion and exclusion criterias.

Sampling Method: Complete enumeration taking into consideration, the inclusion and exclusion criterias.

Statistical Method Used: Data was analysed using SPSS version 21 for windows. Frequency distribution was compared between near term and post term pregnancies and Chisquare test for proportions was used to identify any significance in outcomes between <40 weeks, 40-41 weeks and >41 weeks pregnancies.

Method of Collection of Data: All the cases for the present study were taken after thorough general physical examination, cardiovascular system and respiratory system, per abdomen and per vaginal examination. Pregnant women with singleton pregnancy, reliable dates based on previous regular menstrual cycles or first trimester scan report were taken for the study. Data was collected using a prepared Proforma while personally interviewing the pregnant females. Routine investigations like Hb%, urine routine; blood group and Rh typing, VDRL, HIV and USG were done. Patients were admitted and managed expectantly or by induction after taking proper consent.

Outcomes Studied: Using week of gestation according to LMP or first trimester scan as the primary predictor variable, its association with the following outcomes were examined

Maternal outcomes

- Mode of birth (caesarean section, vaginal)
- Perineal trauma -soft tissue injuries, sphincter injuries
- Postpartum haemorrhage
- Instrumental deliveries(forceps or vaccum)
- Fetal outcomes
- Perinatal mortality (stillbirth, newborn deaths within first week)
- Transient tachypnea of newborn
- Apgar score less than 8 at 1 and 5 min.
- Admission to neonatal intensive care unit(NICU) and duration of stay there
- Meconium aspiration syndrome

These outcomes were chosen because of both existing evidence of their association with post dated pregnancies as well as the biological plausibility between post dated pregnancies and each of the these outcomes.

The present study includes the pregnant women in 3 groups.

GROUP A.(term pregnancies) from 37+0 to 39+6 wks of gestation.

GROUP B1(post dated pregnancies) from 40+0 to 40+6 wks of gestation.

GROUP B2(post dated pregnancies) from 41+0 to 41+6 wks of gestation.

Results and Discussion

Totally 2799 deliveries occurred in the study period. Following study was done between 10th November 2013 and 9th march 2015, total of 2174 cases have been included In that, number of post dated pregnancies(between 40+0 and 41+6) were 486 cases and there were only 10 cases who were beyond 42+0 weeks. The incidence of post dated pregnancy in our study was 17.36%, where as it was 7.3% and 23.4% in Ambreen Naveed Haq et al⁽¹⁰⁾ and Sarah J Stock et al⁽¹¹⁾ studies respectively. The incidence of post dated pregnancies varies widely. Not many studies have been done on post dated pregnancies as the main concentration till few years back was post term pregnancies.

Incidence of post term pregnancy in our study is 0.36%. The present study shows lower incidence because of the awareness in people about post term pregnancies and precautions are always taken at our hospital not to allow the pregnancy to go beyond 42 weeks of gestation age and elective induction is done at 40+0 weeks here. This shows the need to concentrate on postdated pregnancies as very few cases go till post term.

The other parameters studied are:

1. **Age category:** There was no significant change in distribution of age across groups.
2. **Multigravida status:** Multigravida status (G2 and above) was significantly more in <40 weeks group compared to other two groups ($\chi^2=22.9$, $p=0.03$). Infers that the PRIMIs were more prone for post dated pregnancy.
3. **Para status:** Para 1 status (50.2%) was more in <40 weeks and para 0 (59.5%) was more in 40-41 weeks and above 41 week (56%) groups ($\chi^2=20.5$, $p=0.009$). Again it infers that PRIMIs were more prone for post dated pregnancy.
4. **Previous live births:** Previous live births were more in <40 weeks group (L1 and above -48.3%). L0 was seen more in 40-41weeks (62.4%) and >41 weeks group (56%). This was not statistically significant($\chi^2=24.2$, $p=0.002$).
5. **History of abortions:** History of abortions was more in <40weeks group (17%) compared to 40-41week (14.1%) and >41 weeks group (12%) though the trend seemed non significant.
6. **Previous newborn deaths:** There was no significant differences between groups with respect to previous newborn deaths.
7. **Mode of delivery:** <40 weeks group had greater proportion of RMLE (60%) compared to 58.1% and 56% in 40-41weeks and >41 week group. Both forceps assisted vaginal delivery (3.3%) and vaccumm assisted vaginal delivery (7.8%) were more in 40-41 weeks group. Emergency LSCS was more in >41 week group (45.5%) compared to 40-41 weeks (30.8%)weeks and <40 weeks (21.8%). Elective LSCS was done only in cases < 40 weeks (13.9%) for previous LSCS as the indication, where as prev LSCS cases with post dates were taken for emergency LSCS as soon as their admissions. Chi square for this distribution was significant ($\chi^2=104.9$, $p<0.001$).

Table 1: Mode of delivery, comparison with other studies

Studies	FTND			Instrumental deliveries			Caesarean section		
	37+0 – 39+6 weeks GA	40+0 – 40+6 weeks GA	41+0 – 41+6 weeks GA	37+0 – 39+6 weeks GA	40+0 – 40+6 weeks GA	41+0 – 41+6 weeks GA	37+0 – 39+6 weeks GA	40+0 – 40+6 weeks GA	41+0 – 41+6 weeks GA
Ambreen Naveed Haq et al. ⁽⁵³⁾	-	64.1%	84.6%	-	7.7%	7.7%	-	28.2%	7.7%
Sarah J Stock et al ⁽⁵⁵⁾	79.76%	79.9%	76.1%	10.91%	11.7%	13.2%	9.33%	8.4%	10.7%
Present study	65.8%	58.2%	52.2%	12.4%	11%	2.3%	21.8%	30.8%	45.5%

- Present study has increased number of caesarean sections as all the cases with fetal distress with MSL were taken up for emergency LSCS in order to reduce perinatal morbidity and mortality and increased number of failed inductions as the pregnancy progressed beyond 40+0 weeks.
- This also shows increase in instrumental deliveries as the pregnancy progresses beyond 40 weeks of GA.

8. Indications for LSCS

- **In <40 weeks**, Indications: fetal distress with MSL (16.5%), CPD (2.7%) and previous LSCS (53.4%).
- **In 40-41 weeks**, Indications: fetal distress with MSL (30.4%), non progression of labour (43.5%), fetal distress (19.6%).
- **In >41 weeks**, Indications: fetal distress with MSL (45.5%), non progression of labour (22.7%), fetal distress (18.2%), and previous LSCS (13.6%) in >41 weeks.
- This distribution was significant ($\chi^2=161.8$, $p<0.001$).

This shows that the most common cause for emergency LSCS was MSL causing fetal distress followed by non progression of labour, and their increase with the increase in the GA has also been observed.

9. **Sex of the baby:** Male births was more in <40 weeks and >41 weeks. Female births was more in 40-41 weeks ($\chi^2=7.5$, $p=0.02$). Just an observation and post dated pregnancy could not be attributed to any of the sex.

10. **APGAR score <8 at 1 minute:** Apgar score < 8 at 1 minute was

- 13.5% in <40 weeks.
- 31.3% in 40-41 weeks

- 66% in >41 weeks

This distribution was significant with ($\chi^2=308.7$, $p<0.001$). APGAR score gradually reduced with the progression in post dated pregnancy requiring NICU admission and increasing the chances of perinatal morbidity and mortality.

11. **APGAR score of <8 at 5 minutes:** Apgar score of <8 at 5 minutes was,

- 7.2% in <40 weeks
- 21.1% in 40-41 weeks
- 50% in >41 weeks.

This distribution was significant with ($\chi^2=242.2$, $p<0.001$). APGAR score gradually reduced with the progression in post dated pregnancy requiring NICU admission and increasing the chances of perinatal morbidity and mortality.

12. Admission to NICU

Admission to NICU was

- 9.7% in <40 weeks
- 23.8% in 40-41 weeks
- 52% in >41 weeks

This was significant at $\chi^2=123.4$, $p<0.001$. Perinatal morbidity increased in the form of NICU admission, the rate almost doubled at 41 weeks compared to 40 weeks.

Table 2: Admission to NICU, comparison with another study

Studies	Admission to NICU		
	37+0 – 39+6 weeks GA	40+0 – 40+6 weeks GA	41+0 - 41+6 weeks GA
Sarah J Stock et al ⁽¹¹⁾	12.7%	8%	8.4%
Present study	9.7%	23.8%	52%

13. Perinatal mortality

Perinatal mortality increased with weeks of gestation.

- 0.1% in <40 week group
- 1.6% in 40-41 week group
- 10.3% in >41 week group

Chi square for this distribution was significant ($\chi^2=54.6$, $p<0.001$). There is definite increase in the perinatal mortality as the GA progresses beyond 40 weeks.

Table 3: Perinatal mortality, comparison with another study

Studies	Perinatal death rate		
	37+0 – 39+6 weeks GA	40+0 – 40+6 weeks GA	41+0 - 41+6 weeks GA
Sarah J Stock et al ⁽¹¹⁾	0.07%	0.18%	0.22%
Present study	0.1%	1.6%	10.3%

Present study showed increased perinatal mortality because of increased incidence of meconium aspiration liquor and syndrome, birth asphyxia and intra uterine fetal demise leading to increased perinatal mortality in post dated pregnancies. Above values show the need to terminate pregnancy before 41 weeks to reduce perinatal mortality and hence the plan of induction of labour at 40 weeks of GA.

Conclusion

The present study shows that the incidence of post dated pregnancy is 17.36% and incidence of post term pregnancy is 0.36%. There is definite increase in the incidence of induction of labour compared to spontaneous onset of labour.

Maternal morbidity increased in the form of emergency LSCS, postpartum hemorrhage, instrumental deliveries, as the gestational age increased beyond 40 weeks.

The study also shows that there is significant increase in perinatal morbidity and perinatal mortality in the form of birth asphyxia, meconium aspiration syndrome, increased rate of admission into NICU and perinatal death as the gestational age went beyond 40 weeks.

Management of pregnancy beyond 40 weeks of gestation relies on correct assessment of gestational age. Gestational age assessment by first trimester ultrasound and induction of labour for pregnancy related complications, reduces the incidence of post dated pregnancy.

Treatment and care should always take into account women's individual needs and preferences. Women should have the opportunity to make informed decisions in partnership with their healthcare professionals after being explained about the benefits, risks and complications associated with post dated pregnancy as well as about the induction of labour and the agents used for inducing, failed induction leading to emergency LSCS and the risks and complications involved with them.

To conclude, maternal and fetal morbidity and mortality can be reduced by electively inducing pregnant women at 40+0 weeks as allowing them to continue beyond this gestational age has shown adverse fetomaternal outcomes.

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