

Study of Fetal and Maternal outcome in pregnancy beyond 40 weeks of pregnancy: A Prospective observational study

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Abstract

Aims and objectives

- 1.To study fetal outcome in pregnancy beyond 40 weeks of gestation.
- 2.To study maternal outcome in pregnancy beyond 40 weeks of gestation
- 3.To study mode of delivery in pregnancy beyond 40 weeks of gestation.

Materials and Methods: A prospective observational study of 160 patients with pregnancy beyond 40 weeks of pregnancy fulfilling the inclusion and exclusion criteria and admitted in department of obstetrics and Gynaecology at a tertiary care hospital.

Results: Out of the total 160 females under study, 63.85% were primi-parous while 36.3% were multi-parous. Gestation age of 81.3% females was between 40

to 41 weeks, 11.3% were between 41 to 42 weeks and 7.5% cases were over 42 weeks of gestation. Induction of labour was required in 85% cases of over 40 weeks of gestation. Normal vaginal delivery was done in 37.5% cases while 10% cases had assisted vaginal delivery. Incidence of caesarean section was 52.5%. Most common indication for LSCS was fetal distress (56%) followed by failure of induction (23.8%) and oligohydramnios (13.1%). Overall complication rate among new-borns was 35%. Most common complication observed was meconium aspiration (32.5%) followed by transient tachypnoea of newborn (10.6%) and birth asphyxia (8.8%). Perinatal mortality was 7.5% with IUD as 2.5% and neonatal deaths as 5%. NICU admission was required in 22.5% new-born babies.

Conclusion: Postdated pregnancy is associated with maternal and neonatal complications. Hence postdated pregnancies require early detection, effective and proper planning management to reduce maternal and neonatal morbidity. Maternal and fetal morbidity and mortality can be reduced by electively inducing pregnant women at 40-41 weeks as allowing them to continue beyond this gestational age has shown adverse foeto-maternal outcomes.

Keywords: Neonatal outcome, prolonged pregnancy, perinatal morbidity, ultrasound,

Introduction

The international definition of prolonged pregnancy, according to American college of Obstetrician and Gynecologists (2016b,d) is one that exceeds 42 completed weeks, namely, 294 days or more from the first day of the last menstrual period. Although 42 completed weeks is used as cut off it is not an absolute threshold

There are various terminologies used for the crossed dates pregnancy but these should not be used as interchangeable terms.

- Postdated - 40 completed week
- Late term - 41 weeks to 41+6 weeks
- Post term - 42 completed weeks (294 days)
- Post maturity - it is features of fetus with 42 completed weeks

Smooth expectation labour is the cherished dream of every pregnant woman. Post-term pregnancy has been defined as a pregnancy that persists beyond 294 days or 42 weeks of gestation. Post-datism is been defined as pregnancies beyond 40 completed weeks [1].

The prevalence of prolonged pregnancy across the world varies from 3-12% [2]. Factors that influence the prevalence are maternal age, primiparous women

population, incidence of preterm birth, interventions induction of labour/caesarean section and routine ultrasound dating of pregnancy, antenatal health surveillance and accuracy of gestational age estimation [3]. Risk factors for post term birth include: primiparity, advanced maternal age, maternal obesity, heredity, previous post term pregnancy, and a male foetus [4,5]. Though risk of perinatal complications such as meconium aspiration syndrome (MAS), umbilical cord complications, asphyxia, pneumonia, sepsis, convulsions, shoulder dystocia, traumatic injuries and peripheral nerve damage is higher in post term deliveries than in deliveries at term [6].

Management plan in patients with pregnancy beyond 40 weeks is controversial, more so with routine use of sonography providing information about amount of amniotic fluid, placental aging and fetal weight. Induction of labour is generally undertaken to reduce maternal and fetal morbidity or mortality i.e. when the risks of continuing the pregnancy to either mother or fetus are considered greater than the risks associated with planned birth [7]. Both clinicians and patients are concerned about the risks of induction of labour such as uterine hyper-stimulation, failure of induction and increased in caesarean section rates [6].

Pregnancies beyond 40 weeks are also associated with increased financial costs due to antenatal monitoring, induction of labour and a source of significant anxiety for the pregnant woman [8]. While deciding management plan for postdate pregnancy (more than 40 weeks but less than 42 weeks), the first dilemma is whether to deliver patient and, if so, when and by what route. If one decides for expectant management, still there is confusion for method of antepartum fetal surveillance.

Keeping above discussion in mind, present study was undertaken to study maternal and fetal outcome in pregnancies beyond 40 weeks at our tertiary center.

Material and Methods

Present study Prospective was carried out in department of obs & gyne in BJ Govt medical college, Pune. Study was commenced after approval from ethical committee. The data was collected and documented in predesigned interview schedule. Gestational age was calculated based on the mother's statement of 1st day of last menstrual period and confirmed by the scan taken in the 1st or early 2nd trimester.

Study Duration : 18 months

Inclusion Criteria

1. Women with accurate recall of LMP with last 3 menstrual cycles regular before conception
2. Women with dating ultrasonography report available
3. Women who have not taken any oral contraceptive pills for last 3 months prior to conception
4. Pregnancy with singleton pregnancy
5. Patients who are consenting to study

Exclusion Criteria

1. Pregnancy with congenital anomalies of fetus
2. Multifetal pregnancy
3. Malpresentations
4. Pregnancies complicated by abruption placenta and placenta previa
5. Previous caesarean section
6. Pregnancies with medical disorders like hypertensive disorders, heart diseases, Diabetes mellitus, Hepatic disorders, Thyroid disorders, epilepsy, Renal diseases, Respiratory diseases, thromboembolic disorders
7. Patient who is not willing to give consent

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. CTG, USG parameters and biophysical profile was also done.

Any non-reassuring pattern of NST, oligohydramnios, IUGR, etc. was noted. Findings of antenatal surveillance done by using daily NST and by modified biophysical profile, DFMC was recorded. Type, timing and method of induction of labour done was noted. Intrapartum fetomaternal monitoring was done and recorded. Different maternal outcome like incidence of oligohydramnios, mode of delivery, meconium-stained amniotic fluid during delivery, perinatal outcome in relation to low APGAR score, NICU admission, meconium aspiration syndrome and antenatal, intra-natal or neonatal death was noted.

Results

Table 1. Distribution of study groups as per parity

Parity	N	%
Primi	102	63.8%
Multi	58	36.3%
Total	160	100.0%

Out of the total 160 females under study, 63.85% were primi-parous while 36.3% were multi-parous.

Table 2. Distribution of study groups as per gestation age

Gestational Age	N	%
40-41 weeks	130	81.3%
41-42 weeks	18	11.3%
> 42 weeks	12	7.5%
Total	160	100.0%

Gestation age of 81.3% females was between 40 to 41 weeks, 11.3% were between 41 to 42 weeks and 7.5% cases were over 42 weeks of gestation.

Table 3. Distribution of study groups as per requirement of induction of labour

Induction of Labour	N	%
Spontaneous	24	15.0%
Induction required	136	85.0%
Total	160	100.0%

Induction of labour was required in 85% cases of over 40 weeks of gestation.

Table 4. Distribution of study groups as per mode of delivery

Mode of Delivery	N	%
Normal Vaginal	60	37.5%
Forceps	5	3.1%
Vacuum	11	6.9%
Caesarean section	84	52.5%
Total	160	100.0%

Normal vaginal delivery was done in 37.5% cases while 10% cases had assisted vaginal delivery. Incidence of caesarean section was 52.5%.

Table 5. Distribution of study groups as per indications of Caesarean section

Indication for CS	N	%
Fetal distress	47	56.0%
Failure of Induction	12	14.3%
Failure to progress	8	9.5%
Oligohydramnios	6	7.1%
MSL	6	7.1%
CPD	5	6.0%
Total	84	100.0%

Most common indication for LSCS was fetal distress (56%) followed by failure of induction (14.3%), failure

to progress (9.5%), meconium staining of liquor and oligohydramnios (7.1% each) and CPD (6%).

Table 6. Distribution of study groups as per maternal complications

Maternal Complications	N	%
Prolonged labour	36	22.5%
PPH	21	13.1%
Cervical tear	14	8.8%
Wound Infection	11	6.9%
Perineal tear	4	2.5%
Vaginal lacerations	2	1.3%
None	98	61.3%

Most common maternal complication encountered in females over 40 weeks of gestation was prolonged labour (22.5%) followed by PPH (13.1%), cervical tear (8.8%), wound infection (6.9%), perineal tear (2.5%) and vaginal lacerations (1.3%). Overall maternal complication rate was 38.7%.

Table 7. Distribution of study groups as per neonatal complications

Neonatal Complications	N	%
Birth asphyxia	14	8.8%
TTN	17	10.6%
MAS	52	32.5%
NICU Admission	36	22.5%
Neonatal Death	8	5.0%
IUD	4	2.5%
None	104	65.0%

Overall complication rate among new-borns was 35%.

Most common complication observed was meconium aspiration (32.5%) followed by transient tachypnoea of

new born (10.6%) and birth asphyxia (8.8%). Perinatal mortality was 7.5% with IUD as 2.5% and neonatal deaths as 5%. NICU admission was required in 22.5% new-born babies.

Table 8. Association of fetal complications with gestational age

Fetal Complications	Gestational Age			Total
	40-41 wks	41-42 weeks	>42 weeks	
No	85	12	7	104
	65.4%	66.7%	58.3%	65.0%
Yes	45	6	5	56
	34.6%	33.3%	41.7%	35.0%
Total	130	18	12	160
	100.0%	100.0%	100.0%	100.0%
p-value - 0.876				

High rate of fetal complications was seen in cases beyond 40 weeks of gestation. However, no significant association was observed with increasing gestation age beyond that period (p-0.876).

Table 9. Association of requirement of NICU admission with gestational age

NICU Admission	Gestational Age			Total
	40-41 wks	41-42 weeks	>42 weeks	
No	100	14	10	124
	76.9%	77.8%	83.3%	77.5%
Yes	30	4	2	36
	23.1%	22.2%	16.7%	22.5%
Total	130	18	12	160
	100.0%	100.0%	100.0%	100.0%
p-value - 0.878				

No association was observed between NICU admission rate and increase in gestation age beyond 40 weeks (p-0.878).

Discussion

Post-datism is associated with varied maternal and neonatal complications [6]. Management plan in patients with pregnancy beyond 40 weeks is controversial. Pregnancies beyond 40 weeks are also associated with increased financial costs due to antenatal monitoring, induction of labour and a source of significant anxiety for the pregnant woman [8].

In present study, we aimed to evaluate the fetal and maternal outcome in pregnancy beyond 40 weeks of gestation. Study included 160 antenatal patients above 40 weeks of gestation.

Baseline Data

Out of the total 160 females under study, 63.85% were primi-parous while 36.3% were multi-parous. Gestation age of 81.3% females was between 40 to 41 weeks, 11.3% were between 41 to 42 weeks and 7.5% cases were over 42 weeks of gestation.

Mode of Delivery

Induction of labour was required in 85% cases of over 40 weeks of gestation. Normal vaginal delivery was done in 37.5% cases while 10% cases had assisted vaginal delivery. Incidence of caesarean section was 52.5%. Most common indication for LSCS was fetal distress (56%) followed by failure of induction (14.3%), failure to progress (9.5%), meconium staining of liquor and oligohydramnios (7.1% each) and CPD (6%).

Mahapatro A et al. [10] observed that out of 402 cases, 201 (50%) underwent spontaneous labour & 201(50 %) needed induction of labour. Most common causes of induction were oligohydramnios 88(43.78%) and pregnancy beyond 41 wks 89 (44.27%). Most common mode of delivery was vaginal constituting 263 (65.42%) cases. Fetal distress was the common indication for caesarean section. Bhriegu R et al. [11] observed rate of

induced labour as 71.43% at 41 weeks 1 day to 42 weeks. They observed the overall caesarean rate as 34%, meconium-stained liquor with fetal distress was the most common indication for LSCS 8 (23.5 %). Dobariya PV et al. [12] observed that in 27 out of 84 (32.14%) patients, mode of delivery was caesarean section, in whom most common indication being fetal distress in 48.15% followed by failure to progress in 22.22%. Golait S et al. [13] compared 100 cases of pregnancy between 40-41 weeks and 100 cases of pregnancy 41-42 weeks of gestation design as a group I and group II. It was seen that 20% of the cases and 08% of cases underwent spontaneous labour in group I & II, 16% & 20% cases underwent induced labour type of labour significantly associated with gestation age. 64% of the cases underwent LSCS compare to the 78% of the cases underwent LSCS in group II. Thobbi VA et al. [16] observed that 73.5% of the cases delivered vaginally, the rate of caesarean section was 26.5%. Severe oligohydramnios was the most common indication for caesarean section. The rate of induction was 13%.

Maternal Complications

Most common maternal complication encountered in females over 40 weeks of gestation was prolonged labour (22.5%) followed by PPH (13.1%), cervical tear (8.8%), wound infection (6.9%), perineal tear (2.5%) and vaginal lacerations (1.3%). Overall maternal complication rate was 38.7%. Incidence of maternal complication was 36.9% and 33.3% in cases of 40-41 weeks and 41-42 weeks of gestation. The complication rate increases to 66.7% in women beyond 42 weeks of gestation, especially incidence of PPH (p-0.114).

Dobariya PV et al. [12] observed maternal morbidity like prolonged labor, PPH, fever, wound infection were 10.71%, 5.95%, 3.57% and 3.57% respectively in

pregnancy beyond 40 weeks. Bhriegu R et al. [11] study observed significantly increased risk of obstetric complications in pregnancy beyond 40 weeks, like oligohydramnios, perineal tear, atonic PPH and shoulder dystocia. Khushboo Yasmin et al. [14] study also observed that adverse maternal like postpartum haemorrhage and perineal injury was found to be higher in postdate group. Similar results were seen in the study by Agrawal S et al. [15], where the authors observed that maternal morbidity increased in the form of postpartum hemorrhage and perineal injuries, as the gestational age increased beyond 40 weeks.

Fetal Complications

Overall complication rate among new-borns was 35%. Most common complication observed was meconium aspiration (32.5%) followed by transient tachypnoea of newborn (10.6%) and birth asphyxia (8.8%). Perinatal mortality was 7.5% with IUD as 2.5% and neonatal deaths as 5%. APGAR score of lower than 7 was seen in 20% and 8.1% newborns at 1 and 5 minutes respectively. NICU admission was required in 22.5% new-born babies. High rate of fetal complications and NICU admissions were seen in cases beyond 40 weeks of gestation. However, no significant association was observed with increasing gestation age beyond that period (p-0.876).

Shinge N et al. [9] observed that low Apgar score and meconium-stained liquor are significantly increased in the pregnancies completed 40 weeks and beyond. Perinatal mortality significantly increased in pregnancies completed 40 weeks of gestation and beyond. Mahapatro A et al. [10] observed that out of 402 cases, 35 (8.7%) babies were admitted to NICU most of the admissions were for transient tachypnoea of new born. Out of 402 cases unfortunately intrauterine fetal demise occurred in

5 cases (1.24%) without any risk factors. Bhriegu R et al. [11] observed rate of NICU admission as 33.33% at 41 weeks 1 day to 42 weeks. In this study, authors concluded that prolonged pregnancy was associated with significant risk of perinatal complications like fetal distress, meconium aspiration syndrome and IUGR. Dobariya PV et al. [12] observed perinatal morbidity like IUFD, neonatal asphyxia, MAS, RDS rates as 4.76%, 9.52%, 7.14% and 3.57% respectively in pregnancy beyond 40 weeks.

Thus, to summarize, post-dated pregnancy is associated with various maternal and neonatal complications. We observed that maternal morbidity increased in the form of requirement of C-section and development of postpartum hemorrhage as the gestational age increased beyond 40 weeks. Hence, we should aim for electively inducing pregnant women after 40 weeks of gestation, wherever possible, as allowing them to continue beyond this gestational age is associated with adverse fetomaternal outcomes.

Conclusion

Postdated pregnancy is associated with maternal and neonatal complications. We observed that maternal morbidity increased in the form of requirement of C-section and development of postpartum hemorrhage as the gestational age increased beyond 40 weeks. Hence postdated pregnancies require early detection, effective and proper planning management to reduce maternal and neonatal morbidity. Maternal and fetal morbidity and mortality can be reduced by electively inducing pregnant women at 40-41 weeks as allowing them to continue beyond this gestational age has shown adverse fetomaternal outcomes

Abbreviations

- MAS -Meconium aspiration syndrome
- BMI-Body mass index
- NNT-Number needed to treat
- CTG-Cardiotocography
- BPP-Biophysical profile
- AFI- Amniotic fluid index
- PG- Prostaglandins
- CS- Caesarean section
- GA-Gestational age
- LSCS- Lower segment caesarean section
- PPH-Postpartum haemorrhage
- IUFD-Intrauterine fetal death
- EDD- Expected date of delivery
- IOL- Induction of labour
- PPH- Postpartum haemorrhage
- CPD- Cephalopelvic disproportion
- MSL- Meconium-stained liquor
- OPD- Out patient department
- LMP- Last menstrual period
- PPV- Positive predictive value
- NPV- Negative predictive value
- TVS- Transvaginal ultrasonography
- P/A- Per abdomen
- P/S- Per speculum
- P/V- Per vaginal
- BP- Blood pressur

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