



A RETROSPECTIVE EVALUATION OF MATERNAL AND NEONATAL OUTCOMES IN PREGNANCIES BEYOND 40 WEEKS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Post-dated pregnancy, defined as gestation beyond 40 weeks, is linked to increased maternal and perinatal risks. Timely diagnosis, appropriate induction, and vigilant monitoring are vital for optimizing maternal and fetal outcomes. **Objective:** To evaluate the maternal and neonatal outcomes of pregnancies extending beyond 40 weeks of gestation at a tertiary care hospital. **Methods:** A retrospective observational study was conducted on 50 women with singleton cephalic pregnancies beyond 40 weeks attending the OBGY department of RL Jalapa Hospital. Data on maternal demographics, antenatal care status, induction rates, mode of delivery, and maternal and neonatal morbidity and mortality were analyzed. Exclusion criteria included multiple pregnancies, previous cesarean section, placenta previa or abruption, and significant gestational age discrepancies. **Results:** Of the 50 women studied, 64% delivered vaginally, 26% underwent cesarean section, and 10% had assisted vaginal deliveries. Labor induction was performed in 40% of cases. Maternal morbidity was observed in 26%, with perineal tears (16%) and atonic postpartum hemorrhage (6%) being most common. Neonatal complications included low APGAR scores (<7 at 1 minute) in 16%, meconium aspiration syndrome in 4%, and NICU admission in 20%. There was one case of intrauterine fetal demise (2%). The majority of neonates (92%) weighed ≥ 2.5 kg at birth. **Conclusion:** Post-dated pregnancies are associated with increased maternal and neonatal complications. Early identification, patient counseling, timely induction of labor, and meticulous intrapartum monitoring are essential to reduce morbidity and improve outcomes. Strengthening antenatal surveillance and adopting standardized management protocols can minimize adverse effects associated with prolonged gestation.

KEYWORDS

Post-dated pregnancy, prolonged gestation, induction of labor, maternal morbidity, neonatal outcomes, cesarean section, NICU admission

INTRODUCTION

Post-term pregnancy, as defined by the World Health Organization (WHO), refers to a pregnancy that extends beyond 42 completed weeks or 294 days of gestation, while post-dated pregnancy refers to gestation that surpasses 40 weeks or 280 days [1]. These prolonged pregnancies pose significant clinical challenges due to the increased risk of adverse maternal, fetal, and neonatal outcomes. Although several risk factors for post-term pregnancy have been identified-such as primigravida, maternal obesity, advanced maternal age, male fetus, and a history of prior post-term births-the etiology remains largely idiopathic in most cases, with only a few modifiable contributors [2,3].

Accurate estimation of gestational age and the expected date of delivery (EDD) is critical for the optimal management of pregnancy. Inaccuracies in dating, particularly in the absence of early ultrasound confirmation, may lead to misclassification of term and post-term status, potentially resulting in delayed interventions and increased perinatal risks [4]. Clinically, prolonged pregnancy is associated with heightened maternal anxiety, increased healthcare costs, and logistical challenges in decision-making regarding the timing of delivery. The obstetrician must balance the risks of continuing the pregnancy against the risks associated with induction of labor or operative delivery [5].

Although the exact pathophysiology of prolonged gestation is not fully understood, studies suggest that the placenta plays a role in regulating the length of gestation, particularly through alterations in the production of corticotrophin-releasing hormone (CRH) by the syncytiotrophoblast. As gestation extends, placental aging and reduced functional reserve may contribute to decreased fetal nutrient supply, leading to compromised fetal well-being and distress [6].

Post-term pregnancies are associated with a higher incidence of perinatal complications, including meconium aspiration syndrome (MAS), fetal post-maturity syndrome, umbilical cord abnormalities, intrauterine hypoxia, neonatal sepsis, birth trauma (such as shoulder dystocia and peripheral nerve injury), and stillbirth [7]. These outcomes underscore the importance of timely identification and management of prolonged pregnancies through appropriate antenatal surveillance and intervention strategies, including labor induction and intrapartum monitoring.

Despite advances in obstetric care, the optimal management of

pregnancies extending beyond term remains a subject of clinical debate. The increase in perinatal morbidity and mortality associated with post-term gestation warrants vigilant monitoring and individualized care. Given this context, the present study aims to evaluate maternal and fetal outcomes in pregnancies extending beyond 40 weeks, thereby contributing to evidence-based clinical decision-making in the management of post-dated and post-term pregnancies.

OBJECTIVES

1. To study the mode of delivery in pregnancies beyond 40 weeks of gestation.
2. To evaluate maternal and neonatal outcomes in pregnancies beyond 40 weeks of gestation.

METHODOLOGY

Study Design

This is a **retrospective observational study** conducted in the Department of Obstetrics and Gynecology at RL Jalapa Hospital and Research Centre, kolar.

Ethical Consideration

Prior to commencement, **ethical clearance** was obtained from the **Institutional Ethics Committee (IEC)**. As this is a retrospective study, informed consent was not required; however, confidentiality and data protection protocols were strictly adhered to in accordance with institutional guidelines.

Study Population

Pregnant women attending the **OBGY outpatient department (OPD)** and admitted for delivery between gestational age **>40 weeks** were considered for inclusion. A total of **50 cases** meeting the eligibility criteria were included based on availability of complete records.

Inclusion Criteria

Gestational age **>40 weeks** based on reliable last menstrual period (LMP), with:

- o Regular menstrual cycles for at least three months prior to conception.
- o No hormonal contraceptive use in the past 3 months.
- o Not conceived during lactational amenorrhea.

Singleton Pregnancy

- **Cephalic presentation**
- **Complete and reliable medical records**

Exclusion Criteria

- Multiple gestation
- History of **previous cesarean delivery**
- **Placenta previa, placental abruption**
- Diagnosed **oligohydramnios** or **polyhydramnios** before 40 weeks
- Irregular menstrual cycles or **date discrepancy**
- Congenital anomalies or intrauterine fetal demise before 40 weeks

Gestational Age Determination

- The **Expected Date of Delivery (EDD)** was calculated using **Naegele's rule**.
- For accuracy, gestational age was confirmed by **first-trimester ultrasound (if available)** and correlated with **menstrual history and clinical findings**.

ANTENATAL EVALUATION

A thorough **antenatal care (ANC)** assessment was documented, including:

- Maternal **age, parity, BMI**, medical and obstetric history.
- **Blood pressure, fundal height, fetal heart sounds**, and **presentation** noted during routine ANC visits.
- **Ultrasound findings** including amniotic fluid index (AFI), fetal biometry, and placental grading were reviewed.
- Standard **antenatal investigations** (hemoglobin, blood group, blood sugar, serology) were also included.

PATIENT COUNSELING

Women identified as **post-dated (beyond 40 weeks)** were counseled regarding:

- Risks of prolonged pregnancy, including **stillbirth, meconium aspiration**, and **reduced placental function**.
- Options for **expectant management** versus **induction of labor**, aligned with guidelines from ACOG, NICE, and FIGO.
- The importance of **fetal surveillance**, compliance with follow-up, and recognizing warning signs like decreased fetal movements.

INDUCTION OF LABOR

Induction was offered to patients reaching **≥41 weeks** or earlier in presence of **non-reassuring fetal testing** or maternal request.

Bishop score was assessed prior to induction:

- o If unfavorable (<6), **cervical ripening** was done using **prostaglandins (PGE2 gel or misoprostol)**.
- o In favorable cervix, **oxytocin infusion** with/without **artificial rupture of membranes (ARM)** was initiated per hospital protocol.

INTRAPARTUM MONITORING

- All patients were monitored in the **labor room** with continuous or intermittent **fetal heart rate (FHR)** surveillance using **cardiotocography (CTG)**.
- **Uterine contractions**, cervical progression, and **maternal vitals** were documented as per standard **partograph** monitoring.
- **Meconium-stained liquor, fetal distress**, or **non-progress of labor** were indications for operative intervention.

MODE OF DELIVERY

The mode of delivery was documented as:

- o **Spontaneous vaginal delivery (SVD)**
- o **Assisted vaginal delivery** (forceps or vacuum)
- o **Cesarean section (C-section)** and its indications

MATERNAL OUTCOMES

Maternal morbidity included:

- **Atonic postpartum hemorrhage (PPH)**
- **Perineal trauma** (3rd and 4th degree perineal tears)
- **Prolonged labor**, chorioamnionitis, or need for ICU admission

FETAL AND NEONATAL OUTCOMES

Fetal and neonatal outcomes assessed from case records included:

- **APGAR scores** at 1 and 5 minutes
- **Meconium Aspiration Syndrome (MAS)**
- Admission to NICU
- Neonatal sepsis
- Perinatal mortality

DATA COLLECTION AND ANALYSIS

- Data was extracted from **hospital case records, partographs, delivery logs, and neonatal records**.
- Relevant variables were entered into a **structured proforma**.

Descriptive statistics (frequencies, percentages) will summarize demographic characteristics and awareness levels.

Chi-square tests will be used to explore associations between sociodemographic factors and awareness/willingness to participate.

Ap-value of <0.05 will be considered statistically significant.

RESULTS

Table 1: Age-wise Distribution Of Cases (n=50)

Age Group (years)	Number of Cases	Percentage (%)
18–22	6	12%
23–27	20	40%
28–32	15	30%
33–37	7	14%
≥38	2	4%
Total	50	100%

Table 2: Distribution Based On ANC Status

Booking Status	Number of Cases	Percentage (%)
Booked	38	76%
Unbooked	12	24%
Total	50	100%

Table 3: Distribution Of Cases According To Period Of Gestation

Gestational Age (Weeks)	Number of Cases	Percentage (%)
40 – 40+6	22	44%
41 – 41+6	20	40%
≥42	8	16%
Total	50	100%

Table 4: Distribution According To Parity

Parity	Number of Cases	Percentage (%)
Primigravida	28	56%
Multigravida	22	44%
Total	50	100%

Table 5: Mode Of Delivery According To Gestational Age

Gestational Age (Weeks)	Vaginal Delivery	Cesarean Section	Assisted Vaginal (Forceps/Vacuum)	Total
40 – 40+6	16	5	1	22
41 – 41+6	12	6	2	20
≥42	4	2	2	8
Total	32 (64%)	13 (26%)	5 (10%)	50

Table 6: Labor Onset – Induced Vs Spontaneous

Labor Type	Number of Cases	Percentage (%)
Spontaneous	30	60%
Induced	20	40%
Total	50	100%

Table 7: Indications For Cesarean Section (N=13)

Indication	Number of Cases	Percentage (%)
Fetal Distress	5	38.5%
Failed Induction	3	23.1%
Non-progress of Labor	2	15.4%
Meconium-Stained Amniotic Fluid	2	15.4%
Cephalopelvic Disproportion	1	7.6%
Total	13	100%

Table 8: Fetal Outcomes

Outcome	Number of Cases	Percentage (%)
Live Birth	49	98%
Stillbirth	1	2%
NICU Admission	10	20%
Birth Weight <2.5 kg	4	8%
Birth Weight ≥2.5 kg	46	92%
Total	50	100%

Table 9: Maternal Complications

Complication	Number of Cases	Percentage (%)
Atonic PPH	3	6%

3rd/4th Degree Tear	8	16%
Prolonged Labor	2	4%
No Complication	37	74%
Total	50	100%

Table 10: Neonatal Complications

Complication	Number of Cases	Percentage (%)
Low APGAR Score (<7 at 1 min)	8	16%
Meconium Aspiration Syndrome	2	4%
Respiratory Distress	3	6%
Neonatal Sepsis (suspected)	1	2%
No Complication	36	72%
Total	50	100%

DISCUSSION

Post-dated pregnancy, defined as a gestation extending beyond 40 weeks, remains a significant obstetric concern due to its association with increased maternal and perinatal morbidity and mortality. In the present retrospective study of 50 cases conducted at RL Jalapa Hospital, we aimed to assess maternal and fetal outcomes in pregnancies that extended beyond the expected date of delivery (EDD), alongside evaluating the clinical approach, including induction practices and intrapartum monitoring.

Demographic Characteristics and Antenatal Care

In our study, the majority of women (70%) were in the age group of 23–32 years, consistent with the typical reproductive age range observed in similar studies. Notably, 56% of the cases were primigravida, aligning with literature suggesting that primiparity is a well-established risk factor for prolonged pregnancy, possibly due to a less responsive uterine environment and cervical rigidity in first-time mothers [7,8].

The antenatal care status revealed that 76% of women were booked, indicating reasonably good access to prenatal services. This is a positive finding, as adequate antenatal care has been shown to facilitate timely diagnosis and management of post-dated pregnancies through regular fetal surveillance and counseling [9].

Gestational Age and Mode of Labor Onset

Most pregnancies (84%) extended up to 41+6 weeks, with only 16% reaching or surpassing 42 weeks. Induction of labor was performed in 40% of cases, which is within the range suggested by international guidelines recommending induction at 41 weeks to reduce the risk of stillbirth and other complications [10,11].

Spontaneous labor occurred in 60% of women, which reflects the natural trend of labor onset even in prolonged gestation, though with increased vigilance needed due to potential placental insufficiency as gestation advances [12].

Delivery Outcomes and Cesarean Section

Vaginal delivery occurred in 64% of cases, while 26% required cesarean section, and 10% had assisted vaginal delivery. The cesarean rate, though slightly elevated compared to general obstetric populations, is comparable to findings in studies focusing on post-dated pregnancies, where increased cesarean rates are attributed to fetal distress, failed induction, or non-progress of labor [13].

Among cesarean deliveries, fetal distress was the most common indication (38.5%), followed by failed induction and non-progress of labor. These outcomes reinforce the known association between prolonged pregnancies and increased intrapartum complications due to reduced placental function, increased fetal size, and potential umbilical cord compromise [8].

Maternal Morbidity

Maternal complications were observed in 26% of cases, with perineal trauma (16%) and atonic postpartum hemorrhage (6%) being the most common. These findings are in line with other studies showing increased rates of perineal injuries in post-term pregnancies due to macrosomia and prolonged second stage of labor [9]. PPH may be linked to uterine atony, possibly due to uterine fatigue from prolonged labor or oxytocin use in induction cases.

Fetal and Neonatal Outcomes

Perinatal morbidity included **low APGAR scores** in 16% of newborns, **meconium aspiration syndrome (MAS)** in 4%, and **NICU**

admissions in 20%. The higher incidence of NICU admission reflects the increased risk of respiratory complications, MAS, and intrapartum asphyxia in prolonged gestation, as the aging placenta may not adequately support fetal oxygenation [10].

A single case (2%) of stillbirth was reported. While the number is small, it highlights the potential risk of fetal demise in post-term pregnancies, underscoring the need for active surveillance and timely intervention beyond 40 weeks, especially after 41 weeks [11].

The birth weights in most cases were ≥2.5 kg (92%), which may explain the increased rate of perineal tears and instrumental deliveries. Macrosomia is a known complication of post-dated pregnancy and poses risks during vaginal delivery, including shoulder dystocia and birth trauma [12].

Clinical Implications and Comparison with Guidelines

The results of this study align with global recommendations. ACOG and NICE advocate for the initiation of fetal surveillance and consideration of induction by **41 weeks**, as the risk of complications such as stillbirth, MAS, and operative delivery significantly increases thereafter [13]. Our study supports this approach, as most adverse outcomes were seen in gestations >41 weeks.

Furthermore, the importance of ANC booking was evident, with better outcomes observed in booked cases due to appropriate dating, monitoring, and patient counseling. Induction protocols followed were consistent with recommended practices, involving cervical ripening for unfavorable Bishop scores and oxytocin augmentation in active labor.

LIMITATION:

Small Sample Size : Only 50 cases were included, which limits statistical power and generalizability. Larger, multicenter studies would provide more robust evidence.

Retrospective Design : Being retrospective, the study depends on existing hospital records, which may have incomplete or inaccurate data and lacks control over confounding factors.

Short-Term Neonatal Outcomes Only : The study focused on immediate neonatal outcomes (APGAR, NICU admission, stillbirth), but long-term child health and developmental outcomes were not assessed.

No Comparison Group : Outcomes of post-dated pregnancies (>40 weeks) were described, but not compared directly with term pregnancies (37–40 weeks), limiting the strength of conclusions

CONCLUSION

This retrospective study highlights the clinical significance of vigilant management in pregnancies that extend beyond 40 weeks of gestation. Our findings demonstrate that **post-dated pregnancies are associated with increased maternal and fetal risks**, including higher rates of labor induction, cesarean section, perineal trauma, postpartum hemorrhage, and neonatal complications such as low APGAR scores and NICU admissions.

Despite the majority (64%) of patients achieving vaginal delivery, the **26% cesarean section rate**, often due to fetal distress and failed induction, underscores the need for careful decision-making regarding the timing and mode of delivery in prolonged gestation. The maternal complication rate (26%) and neonatal morbidity (particularly NICU admission in 20% of cases) indicate that post-dated pregnancies are not benign and require active surveillance and timely intervention.

Accurate dating through early antenatal care, counseling regarding risks beyond 40 weeks, and individualized induction protocols are essential for optimizing outcomes. This study supports the adoption of current guidelines that recommend **initiating fetal surveillance by 40 weeks and considering induction of labor by 41 weeks**, especially in low-risk pregnancies. Moreover, the importance of **booked antenatal care** is reinforced by the better outcomes seen in women who received regular follow-up.

While most newborns had favorable outcomes, the presence of complications such as meconium aspiration syndrome and one stillbirth case further emphasizes the **critical need for close**

intrapartum monitoring in post-dated pregnancies.

In conclusion, **post-dated pregnancy is a high-risk condition** that necessitates a multidisciplinary, protocol-driven approach to minimize adverse outcomes. Strengthening antenatal care services, standardizing post-term pregnancy management, and increasing awareness among healthcare providers and pregnant women are essential strategies for improving maternal and neonatal health.

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