

Assessment of Foeto-maternal Outcomes during Prolonged Pregnancy: A Prospective StudyRenuka Keshri¹, Nutan Raj², Arshi Praveen³, Rajni Kaushav⁴¹Associate Professor, Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India²Assistant Professor, Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India³Senior Resident, Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India⁴Junior Resident, Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India

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Abstract

Background: Postdated pregnancy, also known as post-term pregnancy, is a commonly encountered obstetric condition with a significant prevalence. The gestational period spans from 37 to 42 weeks following the final menstrual cycle. A pregnancy that extends beyond the gestational period of 40 weeks is referred to as a post-term pregnancy in medical terminology. In approximately 7% of all pregnancies, gestation extends beyond the anticipated due date.

Methods: This investigation includes every pregnant woman hospitalised after 40 weeks of gestation at the Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram, India. From July 2021 to September 2022, 150 pregnant women who met the inclusion criteria participated in the study.

Results: A total of 150 gravid individuals with post-term gestations provided informed consent to partake in the research investigation. The mean age of pregnant women was 23.36 ± 2.77 years, with 52% being primiparous and 48% being multiparous. Eighty-eight percent of the female participants fell within the gestational age range of 40 weeks to 40 weeks 6 days. Ten percent of the participants were in the gestational age range of 41 weeks to 41 weeks 6 days, while the remaining 2% were in the gestational age range exceeding 42 weeks. A significant proportion of neonates, approximately 80.0%, exhibited a birth weight falling within the range of 2.5 to 3.5 kilogrammes. Conversely, a smaller subset, specifically 14.7%, demonstrated a birth weight surpassing the threshold of 3.5 kilogrammes. In the current study, no significant association was found between the method of delivery and gestational age ($p > 0.05$). A notable association exists between caesarean delivery and gravida in pregnant individuals. Specifically, those who underwent caesarean delivery at 42 weeks of gestation displayed a decreased APGAR score of 4, with statistical significance ($p < 0.01$) observed.

Conclusion: Prolonged gestation is strongly correlated with an elevated likelihood of perinatal complications, including foetal distress. Obstetric complications, such as cephalopelvic disproportion, deep transverse arrest, and caesarean section, exhibit a notably higher likelihood. The prevalence of maternal and foetal complications was found to be greater in primigravida individuals compared to multigravida individuals.

Keywords: Prolonged pregnancy, Primigravida, Multigravida, APGAR, Foetal distress.

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Introduction

The World Health Organisation (WHO) and the International Federation of Gynaecology and Obstetrics (FIGO) acknowledge the terminology postdate, postterm, postmaturity, and prolonged pregnancy as valid descriptors for pregnancies that extend beyond the anticipated date of delivery. Postterm pregnancy (PTP) is medically characterised by the World Health Organisation (WHO) as a gestational period that exceeds 294 days

or 42 weeks [1]. The documented prevalence of post-thrombotic syndrome (PTP) is approximately 7 percent, as stated in reference [2]. The prevalence of a certain condition exhibits variability depending on the specific characteristics of the population and the management practises implemented within the local healthcare system. The prevalence of post-term pregnancy (PTP) varies depending on whether the assessment is solely based on the patient's medical

history and physical examination, or if an early pregnancy ultrasound examination is utilised to estimate the gestational age [3, 4]. The evaluation of gestational age via early ultrasound examination has resulted in a 50% reduction in the occurrence of post-term pregnancy (PTP) [5].

The final menstrual period and an initial ultrasound examination are the most precise determinants of the gestational age during pregnancy. Nevertheless, certain women exhibit a strong dedication to their contraceptive methods and often experience heightened levels of distress upon the occurrence of prolonged menstruation. Pregnancies that occur after the expected due date are commonly linked to various complications that can impact the health and well-being of both the mother and the baby. Prolonged pregnancy has been associated with potential risks such as foetal distress and foetal mortality. These adverse outcomes may arise from progressive foetal hypoxia, which can be attributed to placental insufficiency [6, 7]. The potential hazards linked to an extended pregnancy encompass labour dystocia, a rise in significant perineal trauma resulting from macrosomia, a twofold escalation in the rate of caesarean section deliveries, and heightened anxiety levels [8]. Due to the well-documented rise in perinatal morbidity and mortality rates, the state of prolonged pregnancy has consistently been regarded as a condition associated with heightened risk [9]. In the event of an adverse outcome, the issue of prolonged pregnancy continues to be a challenging clinical concern with the potential for significant medicolegal implications [10]. Accurate determination of the gestational age is imperative for the effective management of pregnancies that have surpassed the 40-week gestational period. The present study is imperative for assessing the maternal and foetal risks associated with post-term pregnancy. A significant unresolved matter in the field of obstetrics pertains to the management of pregnancies that surpass the estimated due date (EDD) by one or more weeks. The obstetrician must carefully evaluate the comparative risks associated with expectant management and delivery in order to make an informed decision. In our research, we investigated the maternal and foetal outcomes of prolonged pregnancies in tertiary healthcare facilities.

Methods

From July 2021 to September 2022, cases with a gestational age greater than 40 weeks were studied at Department of Obstetrics & Gynecology, Narayan Medical College & Hospital, Jamuhar, Sasaram,

India, after 40 weeks of pregnancy. The patient's medical history, symptoms, ultrasonographic findings, general physical examination, systemic examination, and obstetrical examination were thoroughly documented. A relevant routine investigation was conducted. The outcomes of pregnancy were recorded based on the mode of delivery, duration of labour, complications noted at the time of delivery, and the outcome of the foetus. The data was then analysed using appropriate statistical techniques.

Inclusion criteria

Lady with regular menstrual cycles and known LMP with Singleton pregnancy with vertex presentation and Gestational age beyond 40 weeks of pregnancy up to 44 weeks.

Exclusion criteria

Gestational age > 44 weeks, Previous caesarean section cases, High risk pregnancies like diabetes, antepartum haemorrhage (APH), premature rupture of membranes (PROM) and pregnancy induced hypertension (PIH) and Congenital anomalies.

Statistical Analysis

The patient data was entered into a Microsoft Excel spreadsheet and subsequently analysed using IBM SPSS version 23, operating on the Windows 10 platform. The demographic characteristics of the participants and infants are reported in terms of frequency and percentage, while the continuous variables are reported as mean and standard deviation. The data are represented using a bar graph and a pie chart, depending on the type of data. The statistical analysis employed the student t-test to examine the disparity among continuous variables, while the chi-square test was utilised to assess the association between categorical variables. A p-value less than 0.05 indicates statistical significance in the context of hypothesis testing.

Results

Following the acquisition of informed consent, a total of 150 mothers who satisfied the predetermined inclusion criteria were enrolled in the research investigation. The mean age of the mothers who were involved in this study was 23.36 ± 2.77 years. Among the cohort of 150 mothers who satisfied the inclusion criteria, it was observed that 52% were primigravida (mothers experiencing their first pregnancy) and 48% were multigravida (mothers who had previously been pregnant) in the current investigation.

Table 1: Variables related to mothers.

Gestational Age in weeks	Frequency	Percent
40 weeks to 40 weeks + 6days	132	88 %
41 weeks to 41 weeks + 6days	15	10 %
> 42 weeks	3	2 %
Mode of Delivery		
Outlet Forceps	3	2.0
Caesarean section	55	36.7
SPVD	92	61.3
Mode of Induction		
Dinoprostone	39	26.0
Misoprostol	19	12.7
Nil	92	61.3
Birth weight of new-born in kg		
< 2.5 kg	8	5.3
2.5 to 3.5 kg	120	80.0
> 3.5 kg	22	14.7

Eighty-eight percent of the maternal population fell within the gestational age spectrum of 40 weeks to 40 weeks and six days. In the study, it was observed that 61.3% of female participants underwent spontaneous vaginal delivery, whereas 36.7% necessitated a caesarean section, and 2% utilised outlet forceps during childbirth. In the study, a total of 67.3% of female participants were administered Dinoprostone for the purpose of induction, whereas the remaining 32.7% received Misoprostol. All 150 primiparous women successfully gave birth to live neonates, with 80% of the infants falling within the weight range of 2.5 to 3.5 kilogrammes, 14.7% weighing above 3.5 kilogrammes, and 5.3% weighing below 2.5 kilogrammes.

Discussion

Post-term pregnancy, also known as prolonged pregnancy, is clinically defined as a gestational period equal to or exceeding 42+0 weeks (equivalent to at least 294 days from the initial day of the last menstrual cycle and at least 14 days beyond the estimated day of delivery). Females with a medical background of post-term pregnancies are at the highest susceptibility for a subsequent occurrence of post-term pregnancy. Additional risk factors for post-term pregnancy encompass primiparity, male foetus, obesity, and advanced maternal age, among other contributing factors [4-6]. Post-term pregnancy is associated with a range of maternal, foetal, and neonatal complications. These complications may arise due to either excessive foetal development or uteroplacental insufficiency.

The objective of this study was to analyse the maternal and foetal outcomes associated with prolonged pregnancy in a tertiary medical facility. The mean age of the mothers in the present investigation was 23.36 ± 2.77 years. Among the cohort of 150 participants who satisfied the predefined criteria for inclusion in this research investigation, it was observed that 52% of the subjects were primiparous, while the

remaining 48% were multiparous. Consistent with the current study, Verma et al [7] observed that the majority of gravid individuals fell within the age range of 20 to 30 years (91%). In line with the current investigation, 55.12% of the participants in their cohort consisted of primiparous women, whereas 44.87% were multiparous. As per the findings of Nimbargi et al. (year), a study conducted on pregnancies revealed that 58.8% of the cases were categorised as multigravida, indicating multiple pregnancies, while 41.2% were classified as primigravida, indicating first-time pregnancies [8]. Eighty-eight percent of the maternal population fell within the gestational age window of 40 weeks to 40 weeks + 6 days. Subsequently, 10% of the participants were observed to have gestational ages ranging from 41 weeks to 41 weeks + 6 days, while a mere 2% were found to have gestational ages exceeding 42 weeks. In a similar vein, according to the study conducted by Nimbargi et al., it was observed that 93.7% of the participants fell within the gestational age range of 40 weeks to 40 weeks and 6 days. Additionally, 5% of the participants were in the gestational age range of 41 weeks to 41 weeks and 6 days, while 1.3% were categorised in the cohort of 42 weeks or more [8]. In the study, it was observed that 61.3% of women partook in vaginal delivery, while 36.7% opted for caesarean section, and a minority of 2% utilised forceps during childbirth. In this research, the initiation of labour was deemed necessary for 38.7% of the maternal population, while it was not deemed medically warranted for 61.3% of individuals experiencing prolonged pregnancies.

In our research, the predominant factors leading to the utilisation of caesarean section were identified as foetal distress, accounting for 40% of cases, and cephalo-pelvic disproportion (CPD), which constituted 36.36% of the cases. Additional factors contributing to the need for caesarean section encompassed suboptimal induction techniques in approximately 20% of the female population, as well as the

occurrence of deep transverse arrest (DTA) in 3.6% of cases. In line with the aforementioned investigation, Verma et al. documented a vaginal delivery rate of 53.84 percent, a caesarean section rate of 42.33 percent, and an operative vaginal delivery rate of 3.84 percent [7].

In the current investigation, a total of 67.3% of female participants were administered Dinoprostone for the purpose of induction, whereas 32.7% received Misoprostol. In the research conducted by Verma et al. [7], the induction process involved the administration of various medical interventions. Specifically, 70.83 percent of the female participants received prostaglandin gel, 20.83 percent were administered oxytocin, and 8.33 percent underwent the placement of an intracervical foley catheter. Hannah et al. [9] also reported that the primary indication for caesarean section was foetal distress. In line with the current study, Nimbargi V et al. discovered that a significant proportion of women with prolonged pregnancies, specifically 23.7%, experienced the occurrence of foetal distress as the prevailing complication. In cases of prolonged gestation, placental insufficiency plays a significant role in causing foetal distress and mortality. Several research studies indicate that perinatal morbidity, including conditions such as foetal asphyxia, intrapartum distress, and meconium aspiration, exhibits a significant rise with each passing week starting from the 40th week [7]. In a study conducted, it was found that 40% of mothers experiencing prolonged pregnancies exhibited a bishop score greater than 6. Subsequently, 32% of these mothers had a score ranging from 5 to 6, while 28% had a score below 4.

All 150 primiparous women successfully gave birth to viable neonates, with 80% of the neonates falling within the weight range of 2.5 to 3.5 kilogrammes, 14.7% exceeding the weight threshold of 3.5 kilogrammes, and 5.3% falling below the weight threshold of 4 kilogrammes. In a study conducted by Beischer NA et al., it was found that 18.2% of neonates were delivered with a birth weight exceeding 4 kilogrammes [10].

Conclusion

Prolonged gestation is correlated with a notable elevation in the risk of perinatal complications. Obstetric complications, such as cephalopelvic

disproportion, profound transverse arrest, and caesarean sections, exhibit a significantly higher likelihood of occurrence. The prevalence of maternal and foetal complications was found to be greater among primigravida individuals compared to multigravida individuals.

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