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Original Research Article

The Study of Maternal and Fetal Outcomes in Pregnancy beyond 40 Weeks Gestation

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Abstract:

Background: Prolonged or post-dated pregnancies are often linked with heightened risks of perinatal morbidity and mortality, particularly when pregnancies surpass the intended delivery date. While the exact causes of prolonged pregnancy remain unclear, congenital anomalies such as anencephaly are known contributing factors.

Aims & Objectives: The primary objective of this study was to assess the outcomes of post-dated pregnancies, with a specific focus on delivery methods, maternal complications, and neonatal outcomes. Specific aims included evaluating age distribution, gestational age, and parity among study participants, analyzing the mode of delivery and indications for cesarean section, and examining maternal and neonatal complications associated with post-dated pregnancies.

Materials and Methods: This prospective observational study was conducted at GMERS Medical College & Civil Hospital, Junagadh, from July 23 to September 23. The study enrolled 150 pregnant women with post-dated pregnancies beyond 40 weeks of gestation, excluding those with previous cesarean sections, congenital anomalies, malpresentation, multiple gestation, and specified medical conditions. Detailed participant histories and comprehensive physical examinations were collected, including age, parity, last menstrual period, and medical history. Labour and delivery details, including mode of delivery and indications for cesarean section, were meticulously documented. Fetal outcomes such as meconium-stained liquor, NICU admissions, and other complications were rigorously assessed.

Results: The study revealed that 68% of participants underwent vaginal delivery, with 40% of these deliveries being induced. Cesarean section was performed in 32% of cases, primarily due to indications such as fetal distress, failed induction, and severe oligohydramnios. Maternal complications included postpartum haemorrhage (6.6%) and perineal tears (4.6%). The most common fetal complication observed was meconium aspiration syndrome (5.3%). Neonatal complications included NICU admissions (24.6%), perinatal asphyxia (2.6%), and hyperbilirubinemia (2%).

Conclusion: Based on the study findings, it is suggested that considering labour induction at 40 weeks of gestation may be a reasonable approach to mitigate risks associated with prolonged pregnancies. Intervening at this specific gestational age aims to minimize adverse outcomes such as fetal distress and meconium aspiration syndrome, thereby improving overall perinatal outcomes. However, individualized assessments considering maternal health, fetal well-being, and other pertinent risk factors are crucial before deciding on labour induction for post-dated pregnancies.

Keywords: Prolonged Pregnancy, Post-Dated Pregnancy, Maternal Complications, Neonatal Outcomes, Labour Induction.

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Introduction

"Prolonged pregnancy" or "post-dated pregnancy" refers to pregnancies that extend beyond the typical duration of 40 weeks or 280 days from the first day of the last menstrual period. Specifically, a post-term pregnancy is defined as lasting 42 weeks or more. [1,2] Several risk factors contribute to prolonged pregnancy, including being a first-time mother (primigravida), low socioeconomic status, hereditary factors, maternal obesity, rare sulfatase deficiency, and conditions such as anencephaly. [3]

The frequency of post-dated pregnancies varies based on whether estimates are derived from medical history or physical examination. Early ultrasound screening can reduce the incidence of post-dated pregnancies by 50%. [4, 5]

Research indicates that the risk of maternal and perinatal complications increases as pregnancy extends beyond 40 weeks. [6,7] Fetal complications may include increased fetal weight, placental insufficiency, oligohydramnios, cord compression, and meconium aspiration syndrome. Maternal complications may involve cesarean delivery, perineal injuries, and postpartum hemorrhage. [8, 9] Studies by Belchin et al. [10] indicate that certain racial groups, such as Asians, tend to have shorter pregnancy durations. Mathai M et al. further noted that the median gestational age for Indian women experiencing spontaneous labour is 39 weeks. [10] In some ethnic groups, including Indian women, constitutionally smaller babies may lead to early maturity and an early post-mature state. Inducing labour at 40 weeks could reduce morbidity and mortality in these populations. [11]

A significant concern with prolonged pregnancy is the increased likelihood of labour induction or augmentation, which is associated with higher rates of cesarean delivery. This study aims to investigate the fetomaternal outcomes of post-date pregnancy, providing a comprehensive understanding of its impact on both maternal and fetal health.

Materials and Methods

This prospective observational study was conducted over three months, from July 23 to September 23, at GMERS Medical College & Civil Hospital, Junagadh. The study involved 150 pregnant women with post-dated pregnancies. The aim was to explore the fetomaternal outcomes associated with these pregnancies. Participants included antenatal cases beyond 40 weeks of gestation with singleton pregnancies and vertex presentations. Exclusion criteria were set to ensure a focused study population. They included previous cesarean sections, congenital anomalies, malpresentation, multiple gestations, medical conditions such as cardiac disease, diabetes mellitus, hypertension, thyroid disorders, anaemia, and high-risk pregnancies such as hypertensive disorders of pregnancy and antepartum haemorrhage.

Given the potential risks posed by post-dated pregnancies to both the mother and the fetus, the hospital protocol mandated the induction of labour at 40 completed weeks (40+0 weeks). After obtaining written informed consent, detailed histories were collected from each participant. This included information on age, parity, last menstrual period (LMP), past medical history, and first-trimester scan reports. Comprehensive general, physical, and systemic examinations were conducted, with all findings meticulously recorded in a standardized proforma.

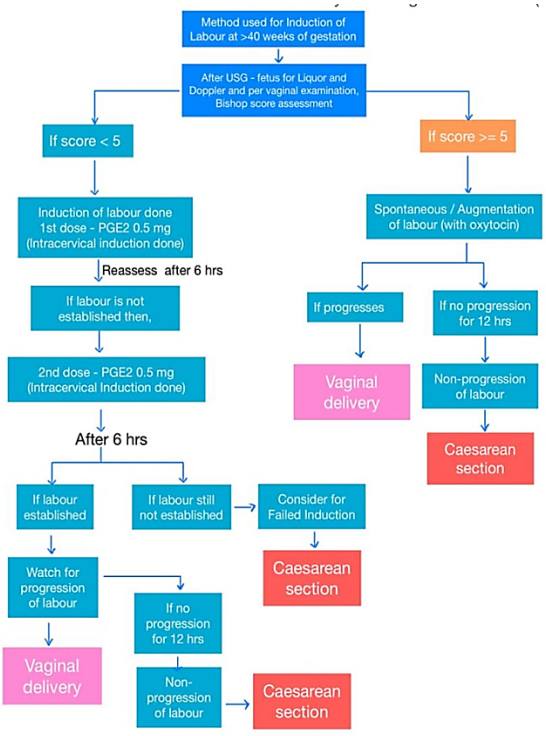

Figure 1: Method used for induction of labour at >40 weeks of gestation

The study meticulously documented various aspects of labour and delivery. This included whether labour was spontaneous or induced and the mode of delivery, which could be normal vaginal delivery, operative vaginal delivery, or cesarean section. Indications for cesarean sections were carefully analyzed and included fetal distress, failed induction, severe oligohydramnios, obstructed labour, and shoulder dystocia.

Fetal outcomes were thoroughly assessed, focusing on critical indicators such as meconium-stained liquor (MSL), post-maturity syndrome, NICU admissions, severe oligohydramnios, macrosomia, intrauterine demise (IUD), and stillbirth. All collected data were entered into Microsoft Excel for detailed analysis, aiming to provide a comprehensive understanding of post-dated pregnancies' impact on maternal and fetal health.

Result

Table 1: Distribution of Age, Gestational age &parity among study participants

Parameters		**No of participants**	**Percentage**
Age; years	<20	4	2.70
	20-35	124	82.70
	>35	22	14.60
Period of gestation: weeks	40-41	137	91.30
	>41	13	8.70
Parity	Primigravida	111	74
	Multigravida	39	26

The study included 150 participants, with the majority (82.70%) in the 20-35 year age group. A smaller percentage of participants (14.60%) were over the age of 35, and only 2.70% were under the age of 20. Regarding the gestation period, most participants (91.30%) were between 40 and 41 weeks, while 8.70% had pregnancies beyond 41 weeks. Regarding parity, most participants (74%) were primigravidas, while 26% were multigravidas. This distribution highlights that post-dated pregnancies were more common among women aged 20-35 years and first-time mothers (Table 1).

Table 2: Mode of delivery and Indication of cesarean delivery

Mode of delivery	**No of participants**	Percentage
Vaginal delivery	102	68
Spontaneous vaginal delivery	42	28
Induced vaginal delivery	60	40
Cesarean delivery	48	32
Fetal distress	16	10.60
Failed induction	19	12.60
Severe oligohydramnios	4	2.60
Obstructed labour	5	3.30
Cephalopelvic disproportion	4	2.60

Among the 150 study participants, the majority (68%) delivered vaginally, with 28% having spontaneous vaginal deliveries and 40% undergoing induced vaginal deliveries. Cesarean deliveries accounted for 32% of the total deliveries. The primary indications for cesarean delivery were failed induction (12.60%) and fetal distress (10.60%). Other reasons included obstructed labour (3.30%), severe oligohydramnios (2.60%), and cephalopelvic disproportion (2.60%). This data suggests that while vaginal delivery was the most common mode of delivery, a substantial proportion of cases required cesarean sections due to complications, with failed induction and fetal distress being the most prevalent reasons (Table 2).

Table 3: Distribution of maternal complications among study participants

Maternal complication	**No of participants**	**Percentage**
PPH	10	6.60
Perineal tear	7	4.60
Wound discharge	6	4

Postpartum haemorrhage (PPH) occurred in 6.60% of cases, making it the most frequent complication. Perineal tears were reported in 4.60% of participants, while wound discharge affected 4% of the study population. These findings underscore the importance of monitoring and managing maternal health post-delivery to mitigate these common complications and ensure optimal recovery and well-being for mothers (table 3).

Table 4: Distribution of neonatal complications among study participants

Fetal complication	No of participants	Percentage
NICU Admission	37	24.60
Perinatal asphyxia	4	2.60
MAS	8	5.30
Postmaturity syndrome	2	1.30
Macrosomia	4	2.60
Hyperbilirubinemia	3	2
IUGR	1	0.70

The most common complication was NICU admission, affecting 24.60% of the newborns. Meconium aspiration syndrome (MAS) was observed in 5.30% of the cases, while perinatal asphyxia was present in 2.60%. Other complications included macrosomia and hyperbilirubinemia, each affecting 2.60% and 2% of the participants, respectively. Additionally, postmaturity syndrome was seen in 1.30% of the cases, and intrauterine growth restriction (IUGR) was noted in 0.70% of the newborns. These findings highlight the increased risk of various neonatal complications in pregnancies beyond 40 weeks of gestation (Table 4).

Discussion

Post-dated or prolonged pregnancy is generally considered a high-risk condition due to its association with increased perinatal morbidity and mortality. The risk escalates significantly when pregnancies continue two or more weeks beyond the expected delivery date. [12] The exact cause of prolonged pregnancy is unknown, but congenital anomalies such as anencephaly in the fetus are recognized factors. These fetuses do not release oxytocin from the pituitary gland or cortisol from the adrenal gland, which is necessary for the onset of labour. [13] This study aimed to determine the fetomaternal outcomes of post-dated pregnancies by analyzing 150 patients based on specific inclusion and exclusion criteria.

In this study, 82.7% of post-dated pregnancies occurred in women aged 20-35, 2.6% were in women under 20, and 14.16% were in women over 35. These findings are similar to those of Kandalgaonkar VP et al., [14] who reported that 80.2% of cases were in the 20-35 year age group, 11.5% in the under 20 year age group, and 8.3% in the over 35 year age group. Studies by Dobariya PV et al. [15] and Patel N et al. [16] also found high proportions of post-dated pregnancies in the 20-30-year age group.

Regarding gravidity, this study found that 74% of the patients were primigravidas, indicating a higher risk of post-date pregnancy among first-time mothers. This aligns with the findings of Mahapatro et al., who reported that 72% of their post-dated pregnancy cases were primigravidas. [17]

In terms of delivery methods, 68% of the women in this study had vaginal deliveries, with 40% of those being successfully induced. Cesarean sections were performed in 32% of the cases, primarily due to failed induction and fetal distress. The higher cesarean section rates were attributed to complications associated with post-dated pregnancies, such as meconium passage, fetal distress, placental insufficiency, and severe oligohydramnios. This is consistent with findings from Punya BS et al. [18], who reported cesarean rates of 30.8% and 45.5% for pregnancies at 40-41 weeks and beyond 41 weeks, respectively, with fetal distress as a significant indication. Similarly, Akhtar P et al. found that cesarean sections were performed in 32% of cases due to fetal distress and in 24% due to failed induction. [19]

The most frequent maternal complication in this study was postpartum haemorrhage (6.6%), followed by perineal tears (4.6%). There were no cases of maternal mortality. For fetal complications, the most common was meconium aspiration syndrome (5.3%), followed by perinatal asphyxia (2.6%) and NICU admissions, which were 21.89% for 40-41 week gestations and 53% for gestations beyond 41 weeks. Other fetal complications included hyperbilirubinemia (2%) and post-maturity syndrome (1.3%). There were no cases of neonatal mortality.

Education about the potential risks and complications of post-dated pregnancies, as well as the possible need for labour induction or cesarean section, is crucial for informed decision-making. Overall, the data indicated a higher percentage of vaginal deliveries compared to cesarean deliveries, with induced vaginal deliveries being more common than spontaneous ones. Monitoring and managing complications such as postpartum haemorrhage, perineal tears, and wound discharge are essential for ensuring the well-being of mothers during the postpartum period.

Conclusion

The management of pregnancies extending beyond a certain gestational age remains a debated topic in the medical community. However, based on the findings of this study, inducing labour at 40 weeks of gestation appears to be a reasonable approach to reduce perinatal morbidity rates associated with

prolonged pregnancies. Inducing labour at this stage aims to mitigate risks such as fetal distress, meconium aspiration syndrome, and stillbirth, thereby improving overall perinatal outcomes. Nonetheless, decisions should be made on a case-by-case basis, considering each pregnancy's individual circumstances and risk factors. Careful assessment of the mother's health, fetal well-being, and any potential complications is essential before proceeding with labour induction.

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