

Comparison of Induction of Labour versus Expectant Management in Postdated Pregnancies in Women: An Observational Study

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Abstract

Background: One significant factor influencing perinatal outcomes is the timing of delivery. It is believed that early labor induction increases the mother's chance of surgical intervention (Caesarean section), particularly in settings where patient labor is not the norm. The purpose of this study is to compare the perinatal and maternal outcomes between the two groups, assess the rates of Caesarean sections, and induce labor with expectant management among pregnant women who go overdue.

Methods: This study, which was planned as a prospective observational study, compares elective induction of labor (e-IOL) with expectant management (EM) up to 41 weeks in overdue pregnancies (40^{1/7} to 40^{6/7} weeks). Examining the difference in the frequency of cesarean sections between the two groups was the main goal. Methodological approach after reaching the 40th week of pregnancy, women who satisfied the study's inclusion and exclusion criteria were contacted. The sample consisted of 112 pregnant women. 56 individuals in Group 1 (e-IOL) were induced between weeks 40^{1/7} and 40^{6/7} of their pregnancies, whereas 56 individuals in Group 2 (EM) received expectant care up until week 41. Group 2 women were further divided into two groups: Group 2a if they went into labor on their own while receiving expectant care, and Group 2b if they were induced for causes related to the mother or fetus or because they were more than 41 weeks pregnant.

Result: Anticipating care into 41 weeks of gestation past the due date without sacrificing perinatal outcome increased the likelihood of spontaneous labor. 78.2% of women in the EM group went into labor on their own and gave delivery vaginally. In our study, e-IOL had a higher rate of cesarean sections (58.9%) than EM (37.5%) (p=0.002).

Conclusion: For women with postdated pregnancies, expectant management led to a lower rate of cesarean sections than elective induction of labor. The perinatal outcomes did not differ across the groups. Participants who went into spontaneous labor while under expectant care had a higher rate of vaginal births.

Keywords: Postdated Pregnancies, Observational, Expectant Management.

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Introduction

A pregnancy that has reached or continued past 42 weeks of gestation from the last menstrual cycle is referred to as post-term. [1] After 41 weeks of pregnancy, there is a progressive increase in perinatal mortality and newborn morbidity, which becomes more pronounced after 42 weeks.[2]

A controversial topic is the clinical treatment of women who continue to be pregnant after their expected date of delivery (EDD). Such pregnancies carry a little but real risk to the fetus. Delaying the induction of labor raises the risk of stillbirth, fetal

distress, and perinatal morbidity, while an earlier induction may expose the mother to a risk inherent to induction of labor, such as a potential greater operative intervention.[3, 4] and its associated morbidity. The majority of guidelines propose induction of labor between 41^{0/7} and 41^{6/7} weeks with prenatal observation and advise delivery at 42 weeks of gestation [1]. Pregnancy duration does vary depending on the mother's ethnicity. For Black and Asian women, the typical gestational age at delivery is approximately 39 weeks.[5] Because of this, a lot of obstetricians in our nation favor

inducing pregnant women as soon as they are postdate ($40^{1/7}$ – $40^{6/7}$ weeks).

The majority of these trials were carried out at 41 weeks of gestation, however the evidence that is now available comparing induction of labor with expectant management has shown that Caesarean section rates are in fact decreased with induction of labor.[6-7] Pregnancies that continue past their due date are treated at our hospital using either expectant management or induction of labor.

Materials and Methods

This prospective observational study was conducted at Sadar Hospital, Motihari, East Champaran, Bihar from January 2025 to December 2025. After providing informed consent, pregnant women who met the inclusion and exclusion criteria and were admitted to our hospital at 40 weeks of gestation were enrolled in the study. Since the study was observational, clinical management was carried out in accordance with various unit protocols, and no intervention was carried out specifically for the study.

With the primary goal (Caesarean section rates) in mind, the sample size of 112 was determined statistically using data from the hospital's previous records over a two-month period. The two-sided confidence level (1-alpha) was set at 95, and the power (% chance of detecting) was set at 80.

All pregnant women at or beyond $40^{0/7}$ weeks (overdate) included in this study. Women with postdate pregnancies with diabetes, hypertensive disorders of pregnancy, cardiac or renal disease, congenital anomalies, fetal growth restriction, obesity and oligohydramnios, suboptimal dating of pregnancy (Unsure LMP and non-availability of early sonography) and those who refuse to give consent for the study were excluded in this study.

Comparison of two groups were labelled as Group 1: Elective Induction of labour between $40^{1/7}$ to $40^{6/7}$ weeks of gestation (e-IOL). Group 2: Expectant management till 41 weeks of gestation (EM). Group 2 was further subdivided to assess the outcome of different lines of management in the expectant group. Group 2a: Who went into spontaneous labour while on expectant management and Group 2b: Who were induced while on expectant management for maternal/fetal reasons or $\geq$

41 weeks of gestation. The induction technique, delivery method, and neonatal outcomes of the first elective induction group were monitored. IOL was offered to every member of the elective induction group at $40^{1/7}$ to $40^{6/7}$ weeks. The antenatal fetal monitoring, which included the twice-weekly non-stress test and the amniotic fluid index, was used to monitor the Expectant Management group 2. The manner of birth, the neonatal prognosis, the necessity for IOL for maternal or fetal reasons, and the spontaneous commencement and progression of labor were all monitored in the expectant management group. At or right after 41 weeks of gestation, induction was offered to every member of the expectant management group.

Meconium passing, irregular cardiotocography, and problems with labor progress were among the other intrapartum occurrences that were observed. Apgar scores at 1 and 5 minutes, baby weight, the requirement for SNCU admission, and neonatal issues were all considered fetal outcomes.

The professional statistics program EPI Info 10.0 edition for Windows was used for analysis once data entry was completed in MS* Excel 2025. For numerical variables, descriptive data was expressed as mean $\pm$ SD; for categorical variables, it was expressed as percentages and proportions. Depending on the kind and distribution of the variables, appropriate significant tests were employed, such as the independent t test for numerical variables, the Fisher exact test for categorical variables, and the Chi square test. Statistical significance was defined as values of $p < 0.05$.

Results

According to the sample size calculation, 112 participants in all were recruited for the study. 56 patients in Group 1 had elective induction of labor (e-IOL) between $40^{1/7}$ and $40^{6/7}$ weeks. Additionally, 56 patients in Group 2 received expectant care until 41 weeks of gestation (EM).

Participants in e-IOL group 1 were 26.6 ± 3.34 year old, while those in EM group 2 were 25.55 ± 2.75 years old. The two groups were similar ($p = 0.067$). In both groups, primigravida and multigravida were similar (Table 1,2).

Table 1: Mean age both group (n=112)

Groups	Mean $\pm$ SD	p-value
Elective induction of labor (e-IOL)	26.6 ± 3.34	0.067
Expectant management (EM)	25.55 ± 2.75	

Table 2: Distribution of participants according to gravidity in elective induction group 1 and expectant management group 2

Gravida	Group1(e-IOL)	Group2(EM)
Primigravida	35(62.5%)	40(71.43%)
Multigravida	21(37.5%)	16(28.57%)

While 41 (73.2%) of the 56 participants in the e-IOL group 1 proceeded into spontaneous labor and 15 (26.8%) were induced, all 56 participants in the EM group 2 underwent induction (Table 3).

Table 3: Distribution of participants according to the type of labour in expectant management EM Group 2

Types of labour	No. of cases (56)	Percentage
Spontaneous	41	73.2%
Induced	15	26.8%

Maximum were induced at 40^{2/7} weeks (16 people, 28.5%) and 40^{3/7} weeks (16 participants, 28.5%) of gestation in the e-IOL group 1. Of the 41 individuals in the EM group (group 2a) who experienced spontaneous labor, 24.4% did so at 40^{2/7} weeks of gestation (10 participants), and 21.9% did so at 40^{1/7} weeks (9 participants).

Of the 15 individuals in EM group 2b (26.8%), 3 were induced for maternal or fetal causes, and 12

(80%) were induced at 41 weeks of gestation because they did not proceed into spontaneous labor. Of the patients in e-IOL group 1, 33 had caesarean sections (58.93%) and 23 had vaginal births (41.07%).

In contrast, 21 patients in EM group 2 had cesarean sections (37.5%) and 35 participants gave birth vaginally (62.5%). The mode of delivery differs statistically ($p=0.002$) (Table 4).

Table 4: Distribution of mode of delivery in elective IOL (Group 1) and expectant management (Group 2)

Mode of delivery	Group 1 e-IOL (No., %)	Group 2 EM (No., %)
Vaginally	23 (41.07%)	35 (62.5%)
Caesarean	33 (58.93%)	21 (37.5%)

Nine women (22%) had a Caesarean procedure, while 32 participants (78%) gave birth vaginally in EM group 2a. Of the fifteen individuals in EM group 2b who had IOL, eight of the twelve (66.6%) who had induction at 41 weeks of gestation had a Caesarean delivery, and one of the three (33.3%) who had induction because of oligohydramnios on fetal monitoring had a Caesarean section.

Foleys catheters were used to induce the majority of patients in the e-IOL group 1 ($n = 31$, 55.3%), followed by 0.5 mg of endocervical dinoprostone gel ($n = 17$, 30.35%), vaginal misoprostol 25 mcg ($n = 4$, 7.14%), dinoprostone vaginal pessary 10 mg ($n = 1$, 1.78%), and oxytocin infusion ($n = 3$, 5.35%). Only 3 (17.6%) of the 31 participants who were induced at 40 weeks of gestation with a foley catheter gave birth vaginally following dinoprostone gel induction, compared to 15 (48.3%) who did so. Fifty percent of the eight individuals in EM group 2b who were induced with a foley catheter at 41 weeks of gestation gave birth vaginally. Dinoprostone vaginal pessary was used to induce three individuals, all of whom had Caesarean sections.

Meconium-stained amniotic fluid (MSF)* and non-progress of labor were the most frequent reasons for a Caesarean section in e-IOL group 1, while unwillingness to continue IOL was the most frequent reason for a Caesarean section in EM group 2. Meconium-stained liquor was consumed by 12 out of 56 individuals in the e-IOL group 1. Ten had Caesarean sections, and two were born vaginally. Eight individuals in EM group 2a had meconium-stained liquor; two of them gave birth vaginally, while six had Caesarean sections.

Additionally, three patients in EM group 2b had meconium-stained liquor, and each of them had a Caesarean section (Table 4).

In e-IOL group 1 (85.7%) and EM group 2 (87.5%), the majority of women gave birth to infants weighing between 2.5 and 3.5 kg. After foley's induction at 41 weeks of gestation, only one baby in the EM group 2 was born vaginally and weighed more than 4 kg at birth ($p=0.9$). Three of the four neonates in the e-IOL group 1 who were admitted to the SNCU due to tachypnea had intrapartum MSF. Two of the four newborns in EM group 2 who were admitted to the NICU developed neonatal tachypnea, but they did not have intrapartum MSF. Neonatal fatalities and other issues were not seen ($p=1$).

Discussion

Perinatal outcomes are significantly influenced by the date of birth. It is believed that early labor induction increases the mother's risk of surgical intervention (a Caesarean section), particularly in settings where labor patience is not the norm. Delaying induction in postdated pregnancy, however, raises the risk of stillbirth, perinatal morbidity, and mortality [8]. Obstetricians' practices vary because there is uncertainty on when to induce pregnancies that are past due. [9]

Determining the ideal timing to give birth requires weighing the advantages and disadvantages. The goal of the current study was to determine whether induction of labor, as opposed to expectant care, raises the rate of Caesarean sections in pregnancies that are past due in a practical setting. 116 people who met the inclusion and exclusion criteria were

included in this observational study. At 40 weeks of gestation, 56 individuals were enlisted in e-IOL group 1 and another 56 in EM group 2. Participants in the two study groups had similar mean ages. Primigravida made up the majority of participants in both groups, and there was no statistically significant difference between them. One established risk factor for postterm pregnancies is nulliparity [10]. In the e-IOL group 1, the majority of individuals underwent induction during the first few days of being postdate, whereas in the EM group 2, the majority underwent spontaneous labor within the same period. Even though elective induction has been linked to a higher risk of unfavorable outcomes in numerous observational studies (Vrouenraets et al.) [11], these studies are thought to have a methodological problem. These trials are intended to compare IOL with spontaneous labor at the same gestational age, which is a potentially deceptive and therapeutically irrelevant comparison. Allowing the pregnancy to advance to a higher gestational age with expectant management is the true clinical alternative comparator to IOL rather than spontaneous labor.[12] Numerous randomized controlled studies (RCTs) have been conducted recently that compare expectant care with conventional IOL at 41 weeks. They have not discovered any variations in the rates of Caesarean sections. [13–14] Expectant management until 41 weeks of gestation and then inducing labor at 41 weeks of gestation led to a significantly higher number of vaginal deliveries (62.5%) than patients who were induced at 40 weeks (41.07%) in the current study that compared elective induction of labor at 40 weeks versus expectant management. The various induction techniques used in the current study were foley's catheter, dinoprostone gel, vaginal misoprostol, or oxytocin alone in the e-IOL group 1 and foley's catheter or dinoprostone vaginal pessary in the EM group 2. The majority of patients in both groups used Foley's catheters. In contrast to prostaglandins, participants who had IOL by foley's catheter followed by oxytocin were more likely to give birth vaginally in both the e-IOL and EM groups. In our investigation, the meconium staining of liquor was unaffected by waiting until 41 weeks before inducing labor. There was no discernible difference in perinatal outcomes between individuals who underwent expectant management and those whose labor was induced.

Conclusion: According to the present study, managing expecting mothers till 41 weeks of gestation lowers the risk of Caesarean section while increasing the chance of spontaneous labor without negatively impacting the perinatal outcome.

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