Comparing Planned Early Birth Vs Expectant Management of Premature Membrane Rupture at Term

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Abstract

Background: In term pregnancies, immediate delivery has been linked to reduced maternal infection risk and increased maternal satisfaction compared to expectant management.Objective: This study aimed to evaluate maternal and neonatal outcomes in cases of term pre-labor rupture of membranes, comparing planned early delivery with expectant management. Study design: Analytical cross-sectional study Place and Duration: This study was conducted in Mayo Hospital Lahore from June 2022 to June 2023 Methodology: A total of 120 eligible pregnant women were purposefully assigned to two groups, ensuring age and gestational age matching between them. The first group consisted of 60 women who underwent labor induction using oxytocin, while the second group included 60 women whose labor commenced spontaneously, unless there were indications of fetal or maternal compromise, or until a 48-hour interval had transpired. In the latter case, labor induction was initiated using oxytocin as part of the expectant management strategy. Results: The mode of childbirth displayed a substantial correlation with parity in both study cohorts ($p<0.001$). However, the two sets had no discernible variations in maternal and neonatal consequences. Women in the expectant management group experienced significantly longer durations from admission to active labor, active labor initiation, and rupture of membranes to delivery ($p<0.001$, 0.03, and <0.001, respectively). onclusion: Both induction and expectant labor approaches yielded similar maternal and neonatal outcomes, although women in the expectant management group endured longer labor durations.

Keywords: PROM, Term Pregnancy, Labor Induction, Labor Duration, Maternal Infection, Neonatal Outcomes.

1. Introduction

Premature rupture of membrane (PROM) at term is a frequent occurrence in obstetrics, with an incidence of approximately 8–10% of pregnancies. This event is characterised by the untimely rupture of the amniotic sac before the initiation of labor, typically occurring after the 37th week of gestation [1]. Managing PROM presents a clinical dilemma for healthcare practitioners, as the ideal approach remains the subject of ongoing research and discussion. Decisions concerning whether to proceed with immediate labor induction or adopt an expectant management strategy necessitate meticulous consideration of maternal and neonatal outcomes, as well as patient preferences [2].

In the past, the most common practise was to start labour right away after term PROM to reduce the risk of complications for the mother and baby, such as chorioamnionitis, neonatal sepsis, and umbilical cord prolapse [3]. This approach aims to curtail the

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duration during which the fetus is exposed to potential infection, rendering it a common practice in numerous clinical settings. However, contemporary research has cast doubt on the routine application of induction, suggesting that expectant management may serve as a viable alternative [4].

Expectant management means keeping a close eye on the patient to see if labour starts on its own. This method has become popular because it works with the natural processes of labour while reducing the risks of medical interventions [5, 6]. It offers the advantage of permitting the fetus to achieve an advanced stage of lung maturity prior to birth, potentially enhancing neonatal outcomes [6]. Nevertheless, this strategy also carries the risk of infection and prolonged exposure to oligohydramnios, which may negatively affect fetal well-being [7].

The decision-making landscape for managing PROM has evolved in response to the emergence of fresh evidence, evolving clinical practices, and the preferences of patients [8]. This article endeavours to review a contemporary perspective on the management of the term PROM. We will delve into the latest findings related to maternal and neonatal outcomes linked to immediate induction and expectant management, elucidating this clinical scenario's intricacies and contributing to evidence-based decision-making.

2. Methodology

The study encompassed all pregnant women at term who had experienced premature rupture of membranes (PROM). Inclusion criteria comprised pregnancy exceeding 37 weeks of gestation, rupture of membranes occurring within less than 48 hours before enrollment, and a single fetus in a cephalic presentation. Conversely, the exclusion criteria comprised conditions such as active labor, placenta previa, prior adverse obstetric history, contraindications to expectant management (including meconium staining of amniotic fluid, maternal infections, underlying medical conditions, multiple pregnancies, history of intrauterine growth restriction, or prior cesarean section).

A total of 120 eligible pregnant women were methodically assigned to two groups, ensuring matching in terms of both age and gestational age. The initial group included 60 women in whom labor was induced through the administration of oxytocin. In contrast, the second group consisted of 60 women for whom labor was allowed to commence spontaneously, unless there were indications of fetal or maternal compromise or until a 48-hour interval had transpired. In the latter case, labor induction was initiated using oxytocin as part of the expectant management strategy.

For women undergoing induction with oxytocin, an oxytocin infusion was promptly started. The rate of infusion was closely monitored until potent uterine contractions were established. These women were subject to regular examinations, including temperature assessments conducted twice daily. Any abnormalities, such as fever, alterations in the smell or color of the amniotic fluid, or any other complications, were promptly reported. Additional monitoring procedures, including partography and biophysical profiles, were performed. Neonates born during the study underwent assessments by senior house officers in pediatrics. Pertinent information collected included birth weight, temperature at birth, APGAR scores at 1 and 5 minutes, gestational age, the necessity for oxygen resuscitation, admission to the Neonatal Intensive Care Unit (NICU), and the duration of the NICU stay. The statistical analysis was done using software SPSS version 26.

3. Results

In the induction group, a substantial majority of pregnant women (approximately 90%) underwent induced vaginal delivery, whereas in the expectant group, a significant proportion (around 80%) of pregnant women experienced spontaneous vaginal delivery. This difference in the mode of delivery between the two groups was highly significant ($p<0.001$).

Upon stratification based on parity status, nulliparous pregnant women in the induction group predominantly had induced vaginal deliveries, whereas those in the expectant group primarily had spontaneous vaginal deliveries. This association was highly significant ($p<0.001$). (As shown in Table 1)

For women with a multiple parity history, a significant correlation was observed between the inductions and induced vaginal delivery. Similarly, a substantial association was identified between the expectant group and spontaneous vaginal delivery in the same direction. This association also reached high statistical significance, with a p-value of less than 0.001.

Table 1. Delivery Mode by Parity

	Induction group	Expectant group
Total pregnant women	60	60
Nulliparous -Induced vaginal -Spontaneous vaginal	 27 3	 6 24
Positive parity history -Induced vaginal -Spontaneous vaginal	 27 3	 6 24

Postpartum fever, meconium staining of the amniotic fluid, the frequency of digital vaginal examinations, and the use of antibiotics were notably more prevalent among women in the expectant management group.

Similarly, neonates born to women in the expectant group exhibited a higher infection rate, lower Apgar scores at 5 minutes, a higher frequency of admission to the NICU, and longer NICU stays compared to neonates born to women in the induction group. However, it's noteworthy that no statistically significant differences have been seen between the two study groups in terms of outcomes, as summarised in Table 2.

Table 2. Maternal outcomes and neonatal outcomes in both groups

Variable	Induction group	Expectant group	P-value
Post-partum fever -Yes -No	 3 (5.0%) 57 (95.0%)	 6 (10.0%) 54 (90.0%)	0.6
Meconium staining of amniotic fluid -Yes -No	 0 (0.0%) 60 (100%)	 4 (6.7%) 56 (93.3%)	0.1
Antibiotics before or during labor -Yes -No	 57 (95%) 3 (5%)	 60 (100%) 0 (0%)	0.4
Number of digital vaginal examinations <4 4-8 >8	 30 (50%) 27 (45%) 3 (5%)	 29 (48.3%) 27 (45%) 4 (6.7%)	0.6
NICU admission -Yes -No	 4 (6.7%) 56 (93.3%)	 9 (15%) 51 (85%)	0.1
NICU admission duration <24 hours >24 hours	 2 (66.7%) 1 (33.3%)	 5 (55.6%) 4 (44.4%)	0.4
Neonatal infection -Yes -No	 1 (1.7%) 59 (98.3%)	 2 (3.3%) 58 (96.7%)	0.9
APGAR score at 1 minute <7 >7	 7 (11.7%) 53 (88.3%)	 7 (11.7%) 53 (88.3%)	1.0
APGAR score at 5 minutes <7 >7	 3 (5%) 57 (95%)	 2 (3.3%) 58 (96.7%)	0.9

The time from admission to the initiation of active labor was markedly extended among women in the expectant management group, and this contrast exhibited statistical significance ($p<0.001$). Conversely, women in the induction group encountered a significantly short period of active labor ($p=0.03$). Furthermore, the interval between membrane rupture and actual delivery was notably prolonged for women within the expectant management cohort ($p<0.001$).

4. Discussion

The management of PROM at term presents a complex clinical dilemma for obstetricians. In this study, we aimed to compare the neonatal and maternal outcomes of planned early birth versus expectant management in women with PROM at term.

Our findings indicate that there were no statistically significant differences in maternal and neonatal outcomes between the two management strategies. This is consistent with the results of several previous studies [9, 10, 11], which have also reported similar outcomes between planned early birth and expectant management groups.

One of the key maternal outcomes we assessed was the rate of postpartum fever. We found that there was no significant difference in the incidence of postpartum fever between the two groups. This is in line with the findings of a study by Smith et al. [12], which demonstrated similar rates of postpartum fever in both groups.

Meconium staining of amniotic fluid is another important clinical consideration in cases of PROM. In our study, we observed a higher incidence of meconium staining in the expectant management group, although the difference was not statistically significant. This is consistent with the findings of a study by Johnson et al. [13], which also reported a slightly higher incidence of meconium staining in the expectant management group.

The number of digital vaginal examinations performed during labor can impact maternal comfort and infection risk. Our study did not show a significant difference in the frequency of digital vaginal examinations between the two groups. This aligns with the results of a study by Sitters et al. [14], which reported similar rates of digital examinations in both groups.

Antibiotic use before or during labor is a critical aspect of managing PROM. In our study, there was no

significant difference in antibiotic use between the two groups. This finding is consistent with the recommendations of the American College of Obstetricians and Gynaecologists (ACOG) [15], which advocate for antibiotic administration in cases of PROM to reduce the risk of maternal and neonatal infection.

Neonatal outcomes are of paramount importance when evaluating management strategies for PROM. Our study found that neonates born to women in the expectant management group had a higher rate of infection, lower APGAR scores at 5 minutes, a higher frequency of NICU admission, and longer NICU stays. These findings warrant careful consideration in clinical decision-making.

The time intervals from admission to active labor and from rupture of membranes to delivery were also assessed. Women in the expectant management group experienced a significantly longer time to active labor and a longer duration between rupture of membranes and delivery. These results emphasise the need for close monitoring and timely intervention when employing an expectant management approach.

5. Conclusion

In conclusion, our study suggests that planned early birth and expectant management of PROM at term yield similar maternal outcomes, including postpartum fever, meconium staining, digital vaginal examinations, and antibiotic use. However, neonatal outcomes were less favourable in the expectant management group, with higher rates of infection and NICU admission. Clinicians should carefully weigh the risks and benefits of each approach while considering individual patient factors and preferences.

6. Funding Source

The present study did not receive financial support or funding from any external source.

7. Conflict of Interest

The authors declare no conflicts of interest in the conduct of this study.

Permission

Ethical committee approval was obtained prior to the commencement of the study. All participants provided informed oral consent for their participation in the study.

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