

# Planned early birth versus expectant management for prelabour rupture of membranes at term

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## Author's Contribution

<sup>1,2</sup>Drafting the work or revising it critically for important intellectual content and analysis of the study  
<sup>3</sup>Substantial contributions to the conception or design of the work

Funding Source: None

Conflict of Interest: None

Received: March 11, 2020

Accepted: Sept 2, 2020

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## ABSTRACT

**Objective:** To compare the feto-maternal outcome of planned early birth versus expectant management among patients with prelabor rupture of membrane at term.

**Methodology:** This randomized control trial was conducted at gynae and OBS department of Liaquat University of Medical and Health Sciences from March 2015 to February 2016. Women with uncomplicated PROM without signs of active labour, having a single alive fetus with cephalic presentation and gestational age of 37 weeks to 42 weeks were included. Patients were divided in two groups. (30 in each group). Group-I (Planned early birth) patients received induction in form of prostaglandin E2 vaginal pessary maximum of two vaginal tablets were used 6 hours apart. The failure of induction was defined as no appreciable or progressive increase in the cervical dilation during 2 hours in the active phase of labour after second dose of prostaglandin E2. Group-II (Expectant management) patients waited for spontaneous onset of labour with maternal and fetal monitoring if labour did not begin within 24/hour than induction started with oxytocin infusion or prostaglandin E2 vaginal pessary to deliver the patient.

**Results:** Total 06 women were incorporated and most of the patients were between age group of 18 to 34 years in both groups (group A and group B) as 83.3% and 80.0% respectively. Rate of caesarean section and maternal complications were statistically insignificant in both groups. However, no maternal mortality and ICU admission were seen. Feto-maternal outcome was statistically insignificant in both groups ( $p > 0.05$ ).

**Conclusion:** Planned management (induction by prostaglandin E2 vaginal pessary) slightly decreases the risk of chorioamnionitis and caesarean section rate. Meanwhile, both management options may not be very different and both methods can be successfully employed for the management of term PROM.

**Keywords:** Term birth, PROM, Prostaglandin Chorioamnionitis.

**Cite this article as:** Sheeraz S, Memon FP, Zaheen Z, Planned early birth versus expectant management for prelabour rupture of membranes at term. *Ann Pak Inst Med Sci.* 2020; 16(3):148-152.

## Introduction

Pre-labour membrane rupture (PROM) is marked as a spontaneous membrane rupture before the initiation of normal uterine contractions. The prevalence of PROM ranges between 6 and 18%.<sup>1</sup> PROM remains the most common clinical issue in which pregnancy at low risk will transform an at term pregnancy into high risk. Premature PROM is a problematic clinical concern and a consideration for gynaecologists.<sup>2</sup> While anticipated

spontaneous labour may lead to an increase in infections for the mother and the newborn, labour induction, on the other hand, leads to preterm birth if there is an increase in neonatal morbidity (like a possible dramatic rise in instrumental deliveries and respiratory distress syndrome (RDS)).<sup>2</sup> The incidence of women undergoing induction of labour (IOL) has risen in recent decades, with major variations between nations and hospitals.<sup>3</sup> Preterm PROM complicates approximately 3% of pregnancies, contributing to almost 33% of premature births.<sup>4</sup> With the

increasing duration of PROM, the risk of foeto-maternal infection may increase.<sup>5</sup> Most doctors advocate induced labour, as spontaneous labour occurs shortly after the membranes rupture delays in at-term pregnancy. Others believe that if there is no sign of foeto-maternal compromise, for mothers, it is better to wait for a spontaneous beginning of labour since the likelihood of C-section may be lower.<sup>5</sup> A study noted that in at term PROM cases, mediating labour induction with prostaglandin shortens the delivery duration and stay at the hospital after delivery with a decrease in neonatal sepsis and maternal sepsis.<sup>6</sup> At the same time, it was recently reported in a research that there was clinically insignificant variation in the incidence of neonatal sepsis among immediately delivered females and those expected to be treated with PPROM before 37 weeks of gestational age.<sup>7</sup> The increase in neonatal RDS incidence, ventilation demand, endometritis, neonatal mortality, ICU admission of neonates, and the likelihood of C-section delivery were associated with early birth, but the incidence of chorioamnionitis decreased.<sup>7</sup> At term-PROM is regulated expectantly or by expected early birth. It is questionable whether waiting for spontaneous delivery is better than intervention, such as through inducing labour.<sup>9,10</sup> Diagnosis and effective management are very important, as it is typically associated with multiple foeto-maternal complications due to infection.<sup>6</sup> Though from the gestational age between 34 and 36 weeks, the inclination for both active management (AM) and expectant management (EM) remains highly controversial.<sup>8</sup> This study has been undertaken to observe the foeto-maternal outcome of planned early birth versus expectant management of patients with PROM at term.

## Methodology

This randomized control trial was conducted at Gynaecology and obstetrics department at Liaquat University Hospital Hyderabad from March 2015 to February 2016 after taking ethical approval from the ethical review committee of LUMHS. The women with uncomplicated PROM without signs of active labour, having single alive fetus with cephalic presentation and gestational age of 37 weeks to 42 weeks were entered into the study. Women in active labour, previous failed attempt to induction of labour, previous caesarean section and with any contraindication of vaginal delivery or expectant management such as placenta previa, meconium staining of amniotic fluid or chorioamnionitis and patients having

any medical disorder like diabetes, chronic liver disease and hypertension were excluded. After taking history, PROM was confirmed by a sterile speculum examination by looking at the pool of liquor in the posterior vaginal fornix or liquid coming out of cervix. After initial evaluation the women were randomized into two groups:

Group-I-30 patients i.e. planned early birth group.

Group-II 30 patients i.e. expectant management group

The women in the planned early birth group were induced with the prostaglandin E2 vaginal tablet i.e. dinoprostine 3mg, vaginal pessary was placed high up in the posterior vaginal fornix, which was repeated after 6 hours if labour not started, the regular fetal heart sound monitoring was done with daily C.T.G and intermittent auscultation of fetal heart sounds with fetoscope 4 hourly. The failure of induction was defined as no appreciable or progressive increase in the cervical dilation during 2 hours in the active phase of labour after second dose of prostaglandin E2. Other group was subjected to the expectant management for 24 hours stayed in the ward. Their pulse and temperature were recorded 4 hourly. They were provided with sterile pads and any change in the colour and odour of liquor amnii was observed. Fetal wellbeing was monitored by auscultation of fetal heartbeats with fetoscope every 4 hourly and fetal kick count chart, and with CTG. They were watched for spontaneous onset of labour when they went into spontaneous labour, it was augmented properly with syntocinon infusion if required. 5IU of syntocinon depending on parity were added into 1000 ml of ringers lactate and started at 2-4miu/minute; rate doubled half hourly until effective uterine contractions started or to a maximum of 32 mu/ml). If they did not go into labour during this period, they were induced as above. If any signs of maternal or fetal compromise appeared during this period, immediate delivery was planned as appropriate, its outcome recorded in both groups. Apgar score of the neonates at one and five minutes was noted. Neonates were followed in the new-born nursery for development of sepsis either definite or probable. Total days of admission in the newborn intensive care unit (NICU) were recorded and perinatal mortality if any and its cause noted. The mothers were followed in the postnatal ward for the development of endometritis which is recognized using the following criteria: Fever of  $\geq 38^{\circ}\text{C}$ . Foul smelling lochia and tender uterus or positive culture of high vaginal swabs. The mothers were kept for 24 hours in case of vaginal delivery, and 3-5 days in case

of caesarean section. In case of maternal or neonatal morbidity, the stay was prolonged. Data was collected via study proforma and results analysis was done by SPSS version 20. Chi-square test was applied and a p-value  $\leq 0.05$  was considered as significant.

## Results

Total 06 women were incorporated and most of the patients were between age group of 18 to 34 years in both groups (group A and group B) as 83.3% AND 80.0% respectively, followed by 16.7% women of group A and 20.0% of group B were seen between age of 30 to 40 years. However, findings were statistically insignificant among both groups according to age. Nulliparous women were more in group A and women with parity 1-4 were more in group B, while parity 5-7 was seen in 13.3% in patients of group A and 20.0% of group B ( $p=0.047$ ). History of abortion was in 4 patients of group A and 4 patients of group B. (Table I)

According to maternal outcome, c-section was done in 6 patients of group A and 8 patients of group B. Puerperal sepsis was noted in 3 patients of group A and 3 patients of group B. Chorioamnionitis was noted in one case of group A and 3 cases of group B, while no maternal mortality and ICU admission were seen. However, findings were statistically insignificant ( $p>0.05$ ). (Table II)

When compared APGAR score is 7/10 after 1 minute 20 (66.7%) VS 18 (60%) while APGAR score after 5 minutes is 10/10 in 15 (50%) VS 13(43.3%). The fetal outcome were compared between two groups no significant difference in proportions was observed (P-value  $>0.05$ ) between groups. (Table II and III)

Variables	Group 1 (n=30)	Group 2 (n=30)	P-value
<b>Age</b>			
18-30	25(83.3%)	24(80.0%)	0.643
30-40	04(16.7%)	06(20.0%)	
Mean $\pm$ SD	29.55 $\pm$ 8.8 years	29.55 $\pm$ 8.8 years	
<b>Parity</b>			
0	04(13.3%)	08(26.7%)	0.047
1-4	10(33.3%)	15(50.0%)	
5-7	15(50.0%)	06(20.0%)	
> 8	01(03.3%)	01(03.3%)	
<b>Abortion</b>			
No	26(86.6%)	23(76.6%)	0.078
1	04(13.3%)	02(6.7%)	
2	00	02(6.7%)	
3	00	03(10.0%)	

Variables	Group 1 (n=30)	Group 2 (n=30)	P-value
<b>Mode of delivery</b>			
Normal	24(80.0%)	22(73.3%)	$>0.05$
C-Section	06(20.0%)	08(26.7%)	
<b>Maternal complications</b>			
Chorioamnionitis	02(6.7%)	03(10.0%)	$>0.05$
PPH	02(6.7%)	01(03.3%)	
P. sepsis	03(10.0%)	03(10.0%)	

Variables	Group 1 (n=30)	Group 2 (n=30)	P-value
<b>Apgar score</b>			
<b>After 1 minute</b>			
6	10(33.3%)	12(40.0%)	$>0.05$
7	20(66.7%)	18(60.0%)	
<b>After 5 minutes</b>			
7	03(10.0%)	03(10.0%)	$>0.05$
8	10(33.3%)	13(43.3%)	
9	02(6.7%)	02(6.7%)	
10	15(50.0%)	12(40.0%)	
<b>NICU admission</b>			
Yes	7(23.3%)	11(36.7%)	$>0.05$
No	23(76.6%)	19(63.3%)	

## Discussion

Pre-labour membrane rupture (PROM) remains an obstetric consideration with unclear etiology, making intervention approaches controversial and complex. Due to different problems related to infection, concerns regarding management strategies develop.

In this study, the mean age was 29.55 $\pm$ 8.8 years. Mean parity was 4.0 $\pm$ 3.0 live births in group A similar to 3.9 $\pm$ 3.1 compared with 3.5 $\pm$ 2.2 in group B. and gestational age 38.3 $\pm$ 0.89 weeks in group A 38.2 $\pm$ 0.75 weeks in B-group. Whereas, in contrast, Ashraf S et al<sup>11</sup> documented 38.25 $\pm$ 0.84 weeks of mean gestational age in Group-A with a mean parity of 1.076  $\pm$  1.16, while gestational age means was 37.95  $\pm$  0.95 weeks in Group B with a mean parity of 1.815 $\pm$ 1.16. However, the mean for PROM durations in Group-A and Group-B were 2.092  $\pm$  0.67 hours and 2.092 $\pm$ 0.67 hours, respectively.

Our findings are in line with the study conducted by Fabiana,<sup>12</sup> who documented 25 cases (33%) and 23 cases (33%) with 37-38 weeks and 37-38 weeks of gestational age in Group-A and Group-B respectively, which was again statistically not significant. In contrast to our study findings, Akter S et al<sup>13</sup> documented 27.24 $\pm$ 6.28 years of mean age and out of the 36% females had an age  $>30$  years, Multi-gravid females were 62%. The females had a

low status of antenatal care, education, and also low Socioeconomic status. The patient had a mean age of gestation at 35 weeks. In our study multiparity was found to be significantly associated with the term PROM. This has been corroborated by other such studies.<sup>14,15</sup> In the present study, when compared APGAR score is 7/10 after 1 minute 20 (66.7%) VS 18 (60%) while APGAR score after 5 minutes is 10/10 in 15 (50%) VS 13 (43.3%). In comparison to our results, Dsouza AS et al<sup>16</sup> reported that patients in late PPROM group (34-36 6/7 weeks of GA) had a significant increase in rates of APGAR score < 7 at 1 minute, APGAR <7 at 5 minute and rate of LSCS.

In the present study, fetal and maternal outcomes were compared amid two groups and in proportions insignificant variance was observed (P-value >0.05) between groups. In comparison, Gull F et al<sup>17</sup> reported that the variance of LSCS and maternal morbidity amid the expectant and induced group was insignificant statistically. However, in contrast to our findings, Berma A et al<sup>18</sup> mentioned that maternal infective morbidity was significantly more in the expectant management group (p=0.001) with no significant difference in the C-Section rates (p= 0.906).

Consistently Fatima S et al<sup>19</sup> reported that the cesarean section rate was 10% in the induction group and 16.67% was in the expectant group without significant difference. Rupture of membranes has been taken as one of the signs of labor and waiting for labor pains to commence can be justified. However, rupture of membranes before the actual onset of labor pains carries with it the risks of maternal and neonatal morbidity and mortality. Therefore, it has to decide whether to wait for spontaneous onset of labor pains or to expedite labor by interventions that could themselves contribute to maternal and fetal morbidity. In this series, we found PPH in two patients of group A and one patient of group B.

Similarly, Kolluri S et al<sup>20</sup> reported that PPH was 10% in the induced group and 6.7% in the expectant group. This may be because; induction of labour has a higher incidence of PPH. Results of this study had shown that there was no wide difference between the two groups regarding fetal outcome. As far as regarding morbidity of fetus, results reported by Shetty et al,<sup>21</sup> and Savitha et al<sup>22</sup> showed no statically significant variation in neonatal morbidity among these groups. Though both of these studies showed an increased incidence of morbidity of neonates within the expectant group when compared with

the induced group their difference was not statistically significant.

Berma A et al<sup>18</sup> also stated that there was no significant difference in neonatal morbidity (p=0.4). However, in contrast to our results, study conducted by Chappell LC et al<sup>23</sup> reported that In contrast to expectant management, scheduled delivery decreases maternal morbidity as well as severe hypertension, with increased neonatal admissions to ICU in terms of prematurity, but no indicators of greater neonatal morbidity. However, Fatima S et al<sup>19</sup> also reported that there was also no significant difference in fetal outcomes in terms of Apgar score NICU admission. To facilitate joint decision making on the time of delivery, this agreement must be addressed with females who have late pre-term pre-eclampsia.

## Conclusion

Planned management (induction by prostaglandin E2 vaginal pessary) slightly decreases the risk of chorioamnionitis and caesarean section. Meanwhile, both management options may not be very different and both methods can be successfully employed for the management of term PROM.

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