

# Comparison of Immediate Induction (Within 6 Hours) Versus Late Induction (After 24 Hours) in Terms of Mean PROM to Delivery Interval in Females Presenting with Term PROM

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## Abstract

**Background:** To compare the immediate induction (within 06 hours) versus late induction (after 24 hours) in terms of mean pre-labour rupture of membranes (PROM) to delivery interval in females presenting with term PROM.

**Methods ;** In this randomized controlled trial, 100 patients were enrolled per inclusion and exclusion criteria and randomly assigned to two groups. For Group A, induction of labor was immediately started with prostaglandin E2 vaginal tablet, whereas for Group B it was done 24 hours later. The PROM to delivery time for both groups was noted down, whether delivered vaginally or by caesarean section. The SPSS Version 17 was used to analyse the collected data. Quantitative variables like age, gestational age, parity and PROM to delivery interval were assessed by calculating mean and SD. Comparison of PROM to delivery interval between the two groups was done by using independent t test. p- Value <0.05 was considered significant.

**Results :**The mean age of the patients included in the study was  $28.40 \pm 4.04$  years. The means for gestational age and parity were  $38.64 \pm 1.15$  weeks and  $1.09 \pm 1.00$  respectively. The mean of PROM to delivery interval for Group A (immediate induction) was  $13.36 \pm 3.16$  hours. The mean for patients in Group B (late induction) was  $33.60 \pm 4.06$  hours (p-value=0.00)

**Conclusion :**The mean time to delivery after PROM is shorter with immediate induction (within 6 hours) as compared to delayed induction (after 24 hours).

**Key Words:** Immediate induction, Late induction, PROM

## Introduction

Pre-labour or premature rupture of membranes (PROM) is defined as the spontaneous leakage of amniotic fluid before the labour starts.<sup>1</sup> This definition

is subcategorized into preterm PROM (when the gestational age is less than 37 weeks) and term PROM (when the gestational age is 37 weeks or greater). This diagnosis excludes women who have rupture of the fetal membranes (amniorrhaxis) following the onset of spontaneous labour. The incidence of PROM is about 15% of all pregnancies and the term PROM constitutes 90% of it.<sup>2,3</sup> While the incidence of PROM is 2.7 – 7% in China and 5 – 15 % in America.<sup>4</sup>

Preterm PROM cases have the involvement of intrinsic or extrinsic factors (in the form of inflammatory mediators) leading towards the weakening of fetal membranes.<sup>2</sup> In women with PROM at term, these risk factors are usually absent, and amniorrhaxis occurs without premonitory signs or symptoms.<sup>5</sup> Amniorrhaxis most likely occurs as a result of proteolytic enzymes, causing weakening of fetal membranes in the cases of term PROM. Proteolytic enzymes involved in weakening of the fetal membranes may originate from bacteria present in the lower genital tract, maternal inflammatory cells, or seminal secretions.<sup>6</sup>

Spontaneous labour starts within 24 hours in 90% of patients having rupture of membranes at term.<sup>7</sup> The duration of ROM is directly proportional to the risk of intrauterine infection which is the most serious complication for the mother and the neonate. Risk of chorioamnionitis is reduced with induction of labour, as compared to expectant management, without increase in the rate of caesarean section.<sup>6,8,9</sup> Groups having early induction show reduced PROM to delivery interval compared with groups having expectant or delayed management. Early induction shortens PROM–delivery interval, reduces the risk of maternal and neonatal infection resulting in shorter hospital stay without increase in caesarean section rate.<sup>10</sup> As rupture of membranes is in itself an indication for the presence of infection, it is not recommended to wait for long before active intervention.<sup>11</sup>

## Patients and Methods

This Randomized Controlled Trial was conducted at Department of Obstetrics and Gynaecology, District Headquarters Teaching Hospital Rawalpindi from December, 2013 to May, 2014. One hundred patients (50 in each group) were enrolled in the study. Patients having singleton pregnancy with cephalic presentation, gestational age between 37 to 41 completed weeks, admitted to labour room within 6 hours of spontaneous PROM and cervical dilation <3 cm and having no evidence of uterine contractions were included in the study. Exclusion criteria was patients having preterm rupture of membranes (before 37 completed weeks), showing sign & symptoms of chorioamnionitis, meconium staining of liquor, multiple pregnancies and patients in active labour. After taking informed consent from the pregnant women enrolled in the study, rupture of membranes was confirmed by history and clinical examination (speculum examination). The patients were randomized into two groups after assessment of maternal and fetal status and finding it satisfactory. In the first group (group A) induction of labour was started immediately i.e. within 06 hours of PROM with prostaglandin E2 vaginal tablet and the 2nd group (group B) was induced 24 hours after PROM with prostaglandin E2 tablet. In both the groups vaginal tablet was repeated if required after 6 hours of the induction. Intermittent fetal heart monitoring with CTG was done and colour of liquor was also noted. Induction was considered to be failed if labour did not commence after repeating 2 doses of 3mg PGE2 tablet. PROM to delivery interval was noted in both groups, whether delivered vaginally or by caesarean section. Any maternal and fetal complications faced were also recorded and managed accordingly. Independent sample t test was used to compare the PROM to delivery interval between the two groups. P Value <0.05 was considered significant.

## Results

The mean age of participants was 28.40± 4.04 years. The mean age of patients stratified in Group A was 28.28±4.13 years compared to patients in Group B 28.52±3.98 years. There was no statistical difference between the two groups (p-value=0.77) (Table 1). The mean gestational age was 38.64 ±1.15 weeks. The mean gestational age of participants in Group A was 38.60 ±1.21weeks compared to patients in group B was 38.68±1.10 weeks. The p-value was 0.73. (Table 1). The mean parity of all patients in the study was 1.09 ±1.00. The mean parity for patients in group A was 1.08± 1.03

versus the patients in Group B 1.10± 0.97. P-value again was not significant for both groups (p-value=0.93). (Table 1). The mean for PROM to delivery interval for all patients was 23.48 ±10.80 hours. The mean for patients in Group A was 13.36 ±3.16 hours. The mean for patients in Group B was 33.60 ± 4.06 hours. The difference was statistically highly significant (p-value=0.00). (Table 2)

**Table 1: Baseline Characteristics.**

	Mean	STD	Mean	STD	Mean	STD	
Age	28.40	±4.04	28.28	±4.13	28.52	±3.98	0.77
Gestational Age	38.64	±1.15	38.60	±1.21	38.68	±1.10	0.73
Parity	1.09	±1.00	1.08	±1.03	1.10	±0.97	0.93

STD= standard deviation.

**Table 2: PROM to delivery interval in hours**

Group	Mean	Standard deviation	P-value
Group A (n=50)	13.36	± 3.16	0.00
Group B (n=50)	33.60	± 4.06	0.00

## Discussion

Aetiology of PROM and PPRM is multi-factorial, but the most important causative factor is localized or systemic infection.<sup>12,13</sup> Prolonged PROM refers to PROM greater than 24 hours and is associated with increased risk of ascending infection so induction of labour is recommended as it decreases the risk of infection.<sup>14-16</sup>

In the management of PROM in term pregnancy to induce labour immediately, for the possible risk of infection or to wait expectantly for the onset of spontaneous labour are the issues, which make the decision difficult. During the last decade, the new recommendations regarding management of patients with term PROM have evolved due to introduction of new antibiotics and improved treatment of maternal and neonatal infection. In majority of the reports, where immediate induction with misoprostol was done, the latency period were significantly shorter, hence the duration of labour and hospitalization period were reduced. However, expectant management was another approach used where in, the operative intervention rate was lesser, without rise in the perinatal and maternal morbidity.

The cases of term PROM are benefited by active management due to reduction in latent period between PROM and delivery. The studies also suggests that there is no significant increase in

incidence of caesarean section due to induction of labour.<sup>17</sup>

In the present study early induction group shows significant reduction in PROM to delivery interval. Different studies inferred that mean period from rupture of membranes to delivery interval was significantly shorter in the induction group as compared to the expectant group.<sup>18,19</sup>

In our study the mean time interval for PROM to delivery was shorter in Group A (immediate induction) (13.36 hrs) than Group B (delayed induction/ expectant group) (33.60hrs). The difference between the two groups was highly significant. The present study shows consistent results with the study done by Krupa et al.<sup>20</sup> The results of the present study are also compatible with the study done by Rath et al.<sup>21</sup>

Studies have shown that oxytocin and prostaglandins (E<sub>1</sub> & E<sub>2</sub>) are beneficial for cervical ripening and stimulation of labor in PROM.<sup>22</sup> Some studies also compared oxytocin alone with transcervical foley / oxytocin for stimulation of labour in patients with PROM. Results show that the use of foley bulb in addition to oxytocin does not shorten the time to delivery as compared to oxytocin alone, but may increase the incidence of intra-amniotic infection.<sup>23-25</sup>

The findings of the current study are contrary to another study conducted in 2011 which concluded that expectant management and delayed induction is better than active intervention and immediate induction in cases of term PROM. The spontaneous labor and vaginal delivery occur in most of the women without increase in the caesarean section rate and infectious morbidity for mother and fetus.<sup>10</sup>

## Conclusion

The mean time to delivery after PROM is shorter with immediate induction (within 6 hours) as compared to late induction (after 24 hours).

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