

# A Prospective Observational Study to Evaluate the Maternal Outcome in Cases of Premature Rupture of Membranes (Prom) at a Tertiary Care Hospital in Northwest Maharashtra State of India

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## ABSTRACT

**Introduction:** Preterm Premature rupture of membranes (PPROM) complicates approximately 3% pregnancies and constitutes about 1/3<sup>rd</sup> of preterm births.

**Aim:** To study the maternal outcome with the duration from Premature rupture of membranes (PROM) to delivery in patients admitted to the Department of Obstetrics and Gynaecology, SMBT Institute, Nashik, MS, India.

**Material and methods:** All pregnant women with watery vaginal discharge were studied and informed written consent was taken. After taking a proper history about leaking, speculum examination was done with all the aseptic precautions to identify & confirm leaking per vaginum using litmus paper test. BISHOP's score was assessed at admission.

In the management, induction & treatment are done as per institutional protocol. Maternal monitoring was done throughout and maternal outcome was assessed with respect to PROM to delivery interval.

**Results:** The incidence of PROM observed in my study was 5.1%. 12 participants delivered within 6 hours of PROM among them 4 delivered vaginally and 8 delivered by LSCS. The maternal complications revealed no statistical significance.

85 participants delivered within 6–24 hours of PROM, 60 delivered vaginally and 25 by LSCS (21 cases among them had raised CRP levels). In this group, maternal complications were seen in 11 patients. It was statistically not significant.

3 participants were delivered after 24 hours by LSCS (all 3 had raised levels of CRP) Maternal complications were seen in all 3 patients. However, it was also not significant due to extreme variations in the number of patients in each group

**Conclusion:** With proper intervention and antibiotic coverage, the PROM to delivery interval does not affect the Maternal outcome.

**Keywords:** Bishop's score, Maternal Outcome, Preterm Premature rupture of membranes.

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## INTRODUCTION

Preterm Premature rupture of membranes (PPROM) complicates approximately 3% of pregnancies and constitutes about 1/3<sup>rd</sup> of preterm births. Term PROM is seen in about 8% of pregnancies.<sup>1-4</sup> It is an important event in pregnancy as it causes maternal complications, maternal morbidity, neonatal morbidity and mortality and increased need for operative procedures.

Managing PROM cases has been the most difficult and controversial problem in obstetrics. One of the biggest problems in PROM cases is the estimation of the exact time of the start of the leak. This problem especially is in primigravidae where the regular uterine contractions may not result in cervical dilatation and the cervical effacement precedes the dilatation of the cervix. Usually, the rupture of fetal membranes before initiation of labour results in progressive dilatation of the cervix and ultimately labour sets in.

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- i. It defines the onset of labour more accurately
- ii. It allows the physician to formulate the management plan as soon as he sees the patient.

Managing premature rupture of membranes goes through various cycles of obstetric activity like only observation and immediate intervention thus affecting the maternal outcome.

Premature rupture of membranes at term is defined as rupture of membranes more than 37 weeks of gestation before the onset of labour.<sup>5</sup> The time from the rupture of membranes to onset of labour is called the latent period. The diagnosis is the key factor in the maternal and fetal outcomes in PROM cases. The diagnosis can be established by simple per speculum examination and leakage from the cervix of clear fluid is observed, or laboratory tests like litmus paper test, and fern pattern can be used.

The accurate assessment of gestational age and the presence and absence of infection is the key to proper management of cases.<sup>6,7</sup> Premature rupture of membranes usually occurs in 2% of cases of all births.<sup>8</sup> Many years ago, the main worry in the case of PROM was intra uterine infection which led to adopt induction of labour policy. This has led to an increase in caesarean section rates in PROM cases who have had their labour induced.

**AIM**

To study the maternal outcome in relation to the duration from premature rupture of membranes (PROM) to delivery in the cases admitted in this institute.

**INCLUSION CRITERIA**

All pregnant patients with confirmed PROM of >28 completed weeks.

**EXCLUSION CRITERIA**

All patients who were known cases of PIH, Eclampsia Gestational Diabetes Mellitus, APH, Heart Disease, IUD and Congenital Anomalies in fetus were excluded.

**SAMPLE SIZE**

Maternal morbidity percentage in previous studies is found to be around 20%.

Therefore, taking P = prevalence/ proportion of morbidity = 20%

Q = 100-P = 100-20 = 80%

ae = allowable error = 8%

Z1- $\alpha$ /2= 1.96 at 5% level of significance

According to the calculation done the sample size obtained was 97 considering loss of patients the sample size taken was 100 subjects.<sup>9</sup>

**MATERIAL AND METHODS**

All pregnant women with watery vaginal discharge were considered for the study. With all aseptic precautions, a speculum examination was done to identify leaking per vaginum, and litmus paper test was done to confirm it. Per vaginal examination was done to assess the Bishop’s score at admission. Maternal monitoring was done to record pulse, BP, Temperature, Abdominal tenderness, and leucocytosis to rule out chorioamnionitis at the earliest and was started on the course of *i.v.* antibiotics.

Need of induction was assessed as per the Bishop’s score and managed as per institutional protocol. Once the patient went into active labor, the mode of delivery was observed as spontaneous vaginal delivery, instrumental delivery (forceps/ vacuum) and lower segment caesarean section. LSCS was done in patients wherever necessary for fetal and maternal indications

The mother was followed up postnatally till discharge for any signs and symptoms of high pyrexia, foul-smelling discharge, burning micturition, wound gapping etc., and the maternal outcome was noted as per the above parameters in relation to the duration from PROM to delivery.

**RESULTS**

Total number of deliveries during the study = 1960.

Number of cases of PROM = 100

Incidence of PROM = 5.1%

**Table 1:** Gestational age-wise distribution of cases.

Gestational age (weeks)	Number	Percentage (%)
28–34	14	14
34–37	16	16
37–40	66	66
>40	4	4
Total	100	100

In our study, the maximum cases of PROM (66%) were term pregnancies with gestational age between 37–40 weeks. 14% of patients were belonging to early preterm PROM, between gestational age 28–34 weeks. 16% of patients belonged to late preterm PROM, between gestational age of 34–37 weeks.

**Table 2:** PROM to delivery interval & maternal outcome.

PROM to Delivery interval	Mode of delivery	Maternal post-delivery complication	Statistical significance
0–6 hours	VD	4	p >0.05 (NS)
	LSCS	8	
6–24 hours	VD	59	p >0.05 (NS)
	Vacuum	1	
	LSCS	25	
>24 hours	VD	0	p >0.05 (NS)
	LSCS	3	
Total	100	15	

Participants who delivered within 6 hours of PROM were 12 among them 4 delivered vaginally and 8 delivered by LSCS. 85 participants delivered within 6–24 hours of PROM amongst them 60 delivered vaginally and 25 by LSCS. 3 participants delivered after 24 hours by LSCS.

No significant association was found between the duration of PROM and mode of delivery.

**Table 3:** Maternal outcome in study participants.

Complications	Number	Percentage (%)
Pyrexia	11	73
Wound dehiscence	2	13
UTI	1	7
Subinvolution	1	7
<b>Total</b>	<b>15</b>	<b>100</b>

In our study, 15 study participants had post-partum complications of which 11 participants (73%) had pyrexia as a post-partum maternal complication. Wound dehiscence was seen in 2 (13%) patients while Subinvolution and UTI in 1 (7%) each.

## DISCUSSION

This study was conducted in the Department of Obstetrics and Gynaecology, SMBT Institute, Nashik, MS, India. The study duration was 18 months. 1960 patients delivered during the study period amongst them 100 participants with PROM and no other complications were included as study participants.

The incidence of PROM observed in my study was 5.1%, nearly similar to the study by Arpita Jaiswal which was suggestive of the overall incidence of PROM as 6.02%.<sup>10</sup> Inshirah Sgayer (2021) observed that the incidence of PROM was 1%.<sup>11</sup> PROM is one of the most common complications of pregnancy contributing to about 0.5–5% of pregnancies. At term, PROM complicates approximately 8% of pregnancies and generally is followed by the prompt onset of spontaneous labour and delivery.<sup>12</sup> The incidence of PROM was 7.7% by Swati Pandey and Anupama Dave in their study conducted at MGM Medical College, Indore.<sup>13</sup> In the study done by Sanjay Kumar Sharma, the incidence of premature rupture of membrane beyond 34 weeks period of gestation was 4.2%.<sup>14</sup> Observations of our study was consistent with the observations of the above-mentioned studies.

In our study 66 cases (66%) were full-term, 14% patients were early preterm (28–24 weeks), 16% of patients belonged to the late preterm group (34–37 weeks). 4% of cases belonged to post-dated pregnancy (Table 6). A similar study done by Trupti Nagaria in whom maximum cases found were above 37 weeks of gestation.<sup>15</sup> Pondru M *et al.* observed that term PROM was more (88.3%) than the preterm PROM (11.7%).<sup>16</sup> In the study done by Tripti Nagaria, she observed that PROM cases belonging to >37 weeks were 70.7% which was consistent with our study.

Almost 63 (63%) cases delivered vaginally either by spontaneous progress of labour or by induction and augmentation of labour whichever is needed. 36 (36%) cases were taken up for caesarean section while one was delivered by vacuum delivery (Table 15). These findings are similar to a study done by Sailaja suggesting rate of LSCS being 27.5%.<sup>17</sup>

Maximum patients (69%) delivered within 6–12 hours of PROM either vaginally or by caesarean section. 12 patients delivered within 6 hours of PROM. 16 patients of PROM needed >12 hours to deliver. 3 patients with more than 24

hours of PROM delivered by caesarean section and had maternal complications

In our study, 15 (15%) study participants had post-partum maternal complications of which 11 participants (73%) had pyrexia, Wound dehiscence was seen in 2 (13%) patients while subinvolution and UTI in 1 (7%) each (Table 25). These findings of maternal morbidity are consistent with the study done by Sailaja in which the maternal complications were seen in 33 cases i.e., 16.5%.<sup>[18]</sup> In their study too it was observed that the commonest complication was pyrexia and no maternal mortality was observed.<sup>14</sup> Another study by Samay Singh concluded that pyrexia was the most common complication contributing to almost 14.5% cases.<sup>19</sup>

12 participants delivered within 6 hours of PROM among them 4 delivered vaginally and 8 delivered by LSCS. Maternal complications revealed no statistical significance.

85 participants delivered within 6–24 hours of PROM, 60 delivered vaginally and 25 by LSCS (21 cases among them had raised CRP levels). In this group maternal complications were seen in 11 patients and neonatal complications were seen in 18 patients. This was statistically not significant.

3 participants delivered after 24 hours by LSCS (all 3 had raised levels of CRP) Maternal complications were seen in all 3 patients. However, it was also not significant due to extreme variations in the number of patients in each group (Table 27). These 3 participants delivering after 24 hours of PROM were preterm PROM of gestational age between 28–34 weeks and were given *inj.* Dexamethasone 6 mg intramuscular 4 doses 12 hours apart for fetal lung maturity. They were administered with injectable antibiotics (*Inj.* Ampicillin 1-gm intravenous every 8 hours). The neonates of these required NICU admission for the same.

## CONCLUSION

With proper intervention and antibiotic coverage, PROM to delivery interval and AFI at admission does not affect the Maternal outcome

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