

## A STUDY OF OUTCOME OF PATIENTS WITH PRETERM PREMATURE RUPTURE OF MEMBRANES IN A TERTIARY CARE HOSPITAL

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### Abstract

**Background:** Premature membrane rupture (PROM) is associated with substantial maternal prenatal morbidity and mortality. The maternal and foetal outcomes in PROM are crucial in Ethiopia, where maternal mortality is still high, to reduce maternal and child mortality as well as to improve care and the avoidance of problems. **Aim & Objective:** The purpose of the study was to examine maternal and neonatal outcomes in patients who underwent preterm premature membrane rupture as well as to find out how these patients fared during labour. To investigate the mortality and morbidity rates for both mothers and newborns related to preterm premature membrane rupture. **Materials and Methods:** From February 2021 to July 2021, this observational study was carried out at an obstetrics ward of a tertiary care facility. **Result:** In both groups, there was evidence of maternal morbidity in terms of PPH, puerperal pyrexia, and wound infection. There was a maternal morbidity of 20.93% in Group I and a morbidity of 41.18% in Group II. The p value was 0.856, which is not significant. In terms of RDS, Sepsis, Hyperbilirubinemia, IVH, Birth Asphyxia, and HIE, there was neonatal morbidity. Neonatal morbidity was 14% in Group I and 41.2% in Group II. Groups I and II both had a 7% and a 23.5% neonatal mortality rate, respectively. The p value is 0.762, which is not significant. **Conclusion:** Our study's goal was to examine maternal and perinatal morbidity as the duration between PPRM and birth increased. With increased PPRM hours, no statistically significant change was found.

## INTRODUCTION

Preterm premature rupture of membranes (PPROM), often known as preterm labour, is the spontaneous rupture of the foetus' membranes before 37 weeks of gestation has passed.<sup>[1]</sup> In 2-3% of all pregnancies, it happens. 30 to 40 percent of preterm deliveries result in an early membranes rupture. The majority of these patients give birth within 48 to 7 days.<sup>[2]</sup> In 8% of full-term pregnancies, the membranes rupture prematurely. Chorioamnionitis, postpartum haemorrhage, and wound infection in the mother are all possible effects.<sup>[3]</sup> Neonatal prematurity causes severe morbidity and mortality. Among the neonatal consequences are cord prolapse, pulmonary hypoplasia, and sepsis. Maternal infections, polyhydramnios, and multiple pregnancies are risk factors for PPRM. Infection-induced thrombin production is a new mechanism that has been linked to preterm premature membrane rupture. PPRM is diagnosed with a per speculum examination. The identification of placental alpha microglobulin I (PAMG I) or insulin-like growth factor binding

protein I (IGFBP-I) in vaginal fluid can also be utilised to make a diagnosis. Following a diagnosis of PPRM, RCOG guidelines advise prevention with antibiotics such erythromycin.<sup>[4]</sup> For the development of the fetus's lungs, women who are between 24 and 33.6 weeks along in their pregnancy should take corticosteroids. If the patient is in labour and the gestational age is between 24 and 29.6 weeks, magnesium sulphate is also advised. Without increasing maternal morbidity from infection, timely therapy of these patients with the right antibiotics and corticosteroids helps to enhance newborn outcomes. Studying maternal and neonatal outcomes in patients who experienced preterm premature membrane rupture and to investigate how patients who experienced a preterm premature membrane rupture fared during labour was the aim of the study. To determine the maternal and neonatal morbidity and death associated with preterm premature membrane rupture.

## MATERIALS AND METHODS

From February 2021 to July 2021, this observational study was carried out at an obstetrics ward of a tertiary care facility. After obtaining written informed agreement, study participants comprised women admitted to an obstetrics ward with a viable pregnancy and preterm premature rupture of membranes were included in the study. All pregnant women who were carrying a singleton between 28 and 36 weeks along with a preterm premature rupture of the membranes met the inclusion criteria. Multiple pregnancies, uterine deformities, patients who refused to provide consent, and gestational ages of fewer than 28 weeks were exclusion criteria. After receiving approval from the institutional ethical committee, the study was carried out at the obstetrics ward of a tertiary care facility. All patients who underwent delivery at our institution and had a viable pregnancy with preterm premature membrane rupture were included in the study. Patients who had been born vaginally and via caesarean section were included. Two groups of patients were created: Group I: Patients who had given birth within 12 hours of prom were included. Group II: Patients in this group gave birth 12 hours following the commencement of PPROM. According to the

institutional policy, antibiotics were administered to the patients in both groups. Steroid injections were also administered to help the fetus's lungs mature. Infection-related symptoms such as fever, foul-smelling vaginal discharge, gaping, or discharge from the episiotomy or LSCS suture site were kept an eye out for in the patients. Postpartum haemorrhage (PPH), which is caused by uterine subinvolution caused by puerperal infection, was also observed in both groups. The emergence of the Respiratory Distress Syndrome (RDS), sepsis symptoms, Birth asphyxia, hyperbilirubinemia, intraventricular haemorrhage (IVH), and hypoxic ischemic encephalopathy in neonates was monitored (HIE). Neonatal mortality in the two groups was also contrasted. Puerperal pyrexia, wound infection and PPH were parameters used to evaluate maternal morbidity. Neonatal morbidity was evaluated in terms of RDS, Sepsis, Hyperbilirubinemia, IVH, Birth asphyxia and HIE. The results were compared in both the groups. Using the chi-square test, the statistical significance of maternal morbidity in the two groups was examined. Using the chi-square test of significance, the neonatal morbidity and death according to the PPROM to delivery interval were also compared.

## RESULTS

**Table 1: Distribution according to PPROM to delivery interval**

PPROM	No. of cases	Percentage
<12 hours	43	71.6
>12 hours	17	28.4
Total	60	100

[Table 1] Shows that patients were compared according to delivery time interval between PPROM. 71.6% of the patients were delivered within 12 hours of PPROM onset and while 28.4% of the patients were delivered within more than 12 hours.

**Table 2: Maternal morbidity association to interval between PPROM and delivery**

PPROM	No. of cases	Puerperal Pyrexia	Wound infection	PPH	Total
<12 hours	43	3 (6.98%)	2 (4.65%)	4 (9.3%)	9 (20.93%)
>12 hours	17	2 (11.8%)	3 (17.65%)	2 (11.8%)	7 (41.18%)
Total	60	5 (8.3%)	5 (8.3%)	6 (10%)	16 (26.7%)

[Table 2] Shows that the percentage of patients who developed puerperal pyrexia, wound infection, PPH was increased from 6.98%, 4.65% and 9.3% respectively from group 1 to 11.8%, 17.65% and 11.8% in group II. P value for maternal morbidity was 0.856 which was not significant.

**Table 3: Neonatal morbidity distribution according to PPROM and delivery interval**

PPROM	No. of cases	RDS	Sepsis	Hyper Bilirubinemia	IVH	Birth Asphyxia	HIE
<12 hours	43	4	0	3	0	0	0
>12 hours	17	2	3	2	0	3	0

[Table 3] Shows that 4 neonates showed respiratory distress syndrome and 3 neonates showed hyperbilirubinemia in group 1, 2 neonates showed respiratory distress syndrome, 3 neonates showed sepsis, 2 neonates showed hyperbilirubinemia and 3 neonates showed birth asphyxia in group 2.

**Table 4: Foetal outcome distribution**

PPROM	Neonatal morbidity, %	Neonatal mortality, %
<12 hours	6, 14%	3, 7%

>12 hours	7, 41.2%	4, 23.5%
Total	13, 21.7%	7, 11.7%

[Table 4] Shows that neonatal morbidity was 14% and neonatal mortality was 7% in group 1, neonatal morbidity was 41.2% and neonatal mortality was 23.5% in group II. The P value of neonatal morbidity and mortality was 0.762 which was not significant.

## DISCUSSION

Maternal morbidity in a research by Swathi et al.<sup>[5]</sup> was 9%. In the present study, maternal morbidity was found to be 21.7%, which were different. Anjana et al.<sup>[6]</sup> study observed a 21% maternal morbidity rate. In their investigation, Okeke et al.<sup>[7]</sup> observed 20% maternal morbidity. These results concurred with those of our investigation. Kamala Jayaram.<sup>[8]</sup> observed neonatal morbidity in 24% of the cases. Shehla Noor.<sup>[9]</sup> recorded a 28.23% perinatal morbidity rate. In our study, neonatal morbidity affected 21.7% of newborns, while neonatal mortality affected 11.7%. Anjana et al.<sup>[6]</sup> observed 5% neonatal mortality. Neonatal mortality was found to be 12%, according to Swathi et al.<sup>[5]</sup> In Twinkle Bharat Ashar study.<sup>[10]</sup> depending on how long it took for the membranes to rupture and for the patient to deliver, the patients were split into two study groups, Group I and Group II, in both groups, there was evidence of maternal morbidity in terms of PPH, puerperal pyrexia, and wound infection. There was a maternal morbidity of 16.2% in Group I and a morbidity of 30.2% in Group II. The p value is 0.72, which is not noteworthy. In terms of RDS, Sepsis, Hyperbilirubinemia, IVH, Birth Asphyxia, and HIE, there was neonatal morbidity. Neonatal morbidity was 13.5% in Group I and 46.1% in Group II. Groups I and II both had a 23% and a 5.4% neonatal mortality rate, respectively. The p value is 0.87, which is not noteworthy. Patil S.A. et al.<sup>[11]</sup> observed that 20–24 year olds had the most cases, while the average age was 22. Nearly 70% of instances were not booked. 9.6 hours on average passed between PROM and hospital admission. febrile sickness was the most typical maternal consequence. Birth asphyxia and three perinatal deaths were the most frequent prenatal outcomes. Tripti Nagaria et al.<sup>[12]</sup> observed that in comparison to the control group, there were more unbooked cases in the study group. The majority of women were between the ages of 20 and 25. Most patients in both groups had pregnancies that lasted longer than 36 weeks. Because of the draining of the liquid amni, PROM causes oligohydramnios. Most of the babies born to women with PROM were underweight. Therefore, term gestational age was linked to a better foetal outcome. Mothers with PROM had a greater likelihood of experiencing a maternal problem. Amala S et al.<sup>[13]</sup> conducted a study on 100 pregnant women after 37 completed weeks with pre labour rupture of membranes. Around 85% of people in the age range of 20 to 29 had a higher than average prevalence of PROM. In the current study, 78% of primigravida had higher

PROM levels. 34% of PROM in this research happened between weeks 38 and 39. Out of 100 cases of PROM, 15 cases had meconium-stained liquor and 85 cases had clear liquor. 66 of the 100 patients had LSCS deliveries, and 34 had vaginal deliveries. Fetal distress was the most frequent LSCS diagnosis in this case (39%), followed by CPD (15%). There was 11% maternal morbidity. Postpartum fever (4%), PPH (2%), and wound infection (2%), among other maternal problems. etc Birth asphyxia (3%), hyperbilirubinemia (4%), respiratory distress (8%) and other perinatal morbidities are among them. Sailaja Surayapalem et al.<sup>[14]</sup> observed that in age group of 20-24years (35%), PROM was common with average age of 22.6 years and SD of 2.8 years, and it was observed to be common in primigravida. Within six hours of PROM, majority of women were admitted (41.5%) and mean duration of induction to delivery interval was 12.9 hours. The mean duration between PROM to delivery was 20.2 hours which was statistically significant. Among primigravidas, cesarean sections were more. The common indication was failure to progress. Maternal morbidity was significant (17.5%). No maternal mortality was observed in the study. Perinatal mortality was 1.5%. Birth asphyxia was the commonest cause. Perinatal morbidity was seen in 26%. Escherichia coli was common organism found in cervical swab culture. Tigist Endale et al.<sup>[15]</sup> observed that 202 of the 4 525 women who gave delivery in hospitals experienced term PROM complications. Approximately 22.2% of the women had poor maternal outcomes. Puerperal sepsis was the most frequent reason for maternal morbidity and mortality. Unfavorable outcomes were experienced by about 33.5% of newborns. Unfavorable outcomes were linked with birth weight less than 2 500 g and PROM duration >12 hours (AOR=5.6, 95%CI 1.3-24.1), latency >24 hours (AOR=2.8, 95%CI 1.7-11.8), and living in rural regions (AOR=4.2, 95%CI 3.96-29.4)

## CONCLUSION

This study concluded that if PPRM lasts longer than 12 hours, there is no appreciable increase in maternal and neonatal morbidity. Furthermore, delivering the patients within 12 hours of PPRM did not appreciably reduce the maternal and newborn morbidity. The study's tiny sample size means that additional research is needed before a definite conclusion can be made.

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