

**Fetomaternal Outcome in Late Preterm Prelabour Rupture of Membranes in Jehangir Hospital**Shikha Ajit Singh Galsar<sup>1</sup>, Shikha Agarwal<sup>2</sup>, Vidhu Yadav<sup>3</sup><sup>1</sup>Consultant, Department of Obstetrics and Gynaecology, Sanjeevani Women's Hospital, Gandhidham<sup>2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, RNT Medical College, Udaipur<sup>3</sup>Senior Resident, Department of Obstetrics and Gynaecology, RNT Medical College, Udaipur

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**Abstract:****Introduction:** Preterm premature rupture of membranes (PPROM) poses a significant challenge in obstetrics, contributing to adverse fetomaternal outcomes. This study aimed to evaluate fetomaternal outcomes in late preterm PPRM cases at Jehangir Hospital, Pune, and Maharashtra.**Methods:** A prospective observational study was conducted from January 2016 to September 2017, focusing on singleton pregnancies experiencing PPRM between 34-37 weeks of gestation. Maternal history, clinical examinations, and relevant investigations were conducted. Maternal outcomes included mode of delivery, febrile morbidity, and postpartum complications, while neonatal outcomes comprised birth weight, Apgar scores, and NICU admissions.**Results:** Among 1735 deliveries, 59 (3.4%) were diagnosed with PPRM. Majority were primigravida (59.3%), with maternal age predominantly between 19-34 years. Notably, 39% had no identifiable risk factors for PPRM. Maternal complications were infrequent, with no instances of chorioamnionitis observed. Most neonates had birth weights between 2-2.5 kg, and Apgar scores varied with gestational age, with lower scores noted in earlier gestational ages. NICU admission rates were higher in the 34-34+6 weeks group.**Conclusion:** The study highlights the significance of maternal age and risk factor identification in PPRM cases. Understanding these factors aids in clinical management and improves outcomes. Regular antenatal and intrapartum monitoring are crucial in managing this common pregnancy complication.**Recommendations:** Comprehensive assessment of fetomaternal outcomes in late preterm PPRM cases provides insights into effective obstetrical management strategies. Identifying risk factors and optimizing care protocols can mitigate adverse outcomes, ensuring better maternal and neonatal health.**Keywords:** PPRM, Feto-maternal, PPH, NICU.

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**Introduction**

Preterm prelabour rupture of membranes (PPROM) refers to the premature rupture of fetal membranes occurring between 34-37 weeks of gestation before the onset of labor[1][2]. While the spontaneous rupture of membranes is a normal event during labor and delivery, PPRM presents unique challenges.

The duration from membrane rupture to delivery, known as the latent period, varies inversely with the gestational age at which PPRM occurs[3]. It complicates approximately 4.5% of pregnancies and is responsible for a nearly one-third preterm births.[4][5] This condition increases the risk of prematurity and is associated with various perinatal and neonatal complications, including a 1-2% risk of fetal death.[2] Clinical presentation typically includes fluid leakage, vaginal discharge, vaginal bleeding, and pelvic pressure, often without

accompanying contractions.[1]The consequences of PPRM can be severe, leading to perinatal morbidity such as placental abruption, umbilical cord prolapse, fetal demise, respiratory distress syndrome, and neonatal sepsis. Maternal complications may also arise, including chorioamnionitis, postpartum endometritis, disseminated intravascular coagulopathy, maternal sepsis, and Asherman's syndrome.[6][7]

The aetiology of PPRM is multifactorial, with factors such as infection (e.g., Group B streptococcal infection, bacterial vaginosis), previous preterm birth, cervical procedures (e.g., conization, encerclage), uterine enlargement (e.g., twins, hydramnios), and lifestyle factors (e.g., tobacco use, low body mass index) contributing to its occurrence. Diagnosis relies on maternal history and sterile speculum examination, with ultrasound

aiding in the confirmation and exclusion of other causes of vaginal discharge.[2,8–10]

The management of PPRM focuses on the latent period, during which expectant management, induction of labor, or cesarean section may be warranted depending on maternal and fetal factors. While screening and treating potential risk factors have shown limited efficacy, appropriate evaluation and management are crucial for improving outcomes.[8,11–15]

We conducted this study to assess fetomaternal outcomes in late preterm prelabour rupture of membranes and risk factors for late preterm prelabour rupture of membranes.

### Methodology

We conducted a prospective observational study in the Department of Obstetrics and Gynecology, Jehangir Hospital, Pune, Maharashtra from January 2016 to September 2017. We followed singleton pregnancies who had PPRM between 34-37 weeks. We excluded any pregnant females who had Known previous uterine scars (LSCS/myomectomy), malpresentation, were in active preterm labour, had complications of labour like intrauterine fetal demise, eclampsia and diabetes mellitus, uterine anomalies or refused to give consent. We took a detailed clinical, personal, family, menstrual and obstetric history, full

anthropometric details were taken, diagnosis of PPRM was established using speculum examination. We did a complete blood count (CBC), C-reactive protein (CRP), routine and microscopic urine analysis, and urine culture and sensitivity. High vaginal swab was collected and sent for culture and sensitivity testing.

Intermittent monitoring of uterine activity and fetal heart rate was conducted. Labour progression was monitored through partogram. Maternal outcomes including mode of delivery, urinary tract infection, incidence of chorioamnionitis, febrile morbidity, postpartum haemorrhage, duration of hospital stay, and occurrences of urinary infections were recorded. Neonatal outcomes were evaluated, focusing on birth weight, incidence of hyperbilirubinemia, admission to the neonatal intensive care unit (NICU), and occurrences of sepsis.

### Results

A total of 1735 deliveries were conducted during the study period, 59 (3.4%) were diagnosed with PPRM. Of these, 35 (59.3%) were primigravida.

We assessed the fetomaternal outcome and their relation with the maternal and gestational age. Most of the females were in the age group of 19-34 years, and nearly half of them presented with a gestational age of 36-37 weeks.

**Table 1: Maternal risk factors and outcomes in PPRM cases**

Variable	Count (%)
<b>Gravida</b>	
Primi	35 (59)
Multi	24 (41)
<b>Risk factors for PPRM</b>	
Previous PPRM	12(20)
Recurrent UTI	8(13)
Previous pre-term labour	3 (5)
Polyhydroamnios	5(8)
<b>Vaginal infections</b>	3 (5)
Family history	1(2)
Others	5(8)
No risk factors	23 (39)
<b>Maternal Outcome</b>	
Febrile Morbidity	2 (3)
PPH	2 (3)
<b>Fetal Outcome</b>	
<b>Birth Weight</b>	
<2 kg	2(3)
2-2.5kg	33(56)
>2.5 kg	24(41)
Prematurity	1 (2)
Low birth weight	3 (5)
RDS	5 (8)
Neonatal sepsis	1 (2)
Hyperbilirubinemia	8 (13)

**Table 2: Gestational Age and Fetal outcome in PPRM cases**

Gestational age	Apgar score $\leq 7$	Apgar score $> 7$	P-value
34 wks	3	6	<b>0.002</b>
35 wks	1	19	
36-37	0	30	
<b>NICU Admission</b>	<b>Yes</b>	<b>No</b>	
34 wks	6	3	<b>0.015</b>
35 wks	7	13	
36-37	5	25	

There was a significant difference in the gestational age and the Apgar score of the baby borne of the mother with PPRM with lower scores in the early gestational age. There was also a significant difference in the NICU admission rates in different gestational ages with more proportion of babies in 34 weeks gestational age group requiring NICU admissions.

### Discussion

The present study was an attempt to evaluate the risk factors in women with PPRM and the fetomaternal outcome in such patients. We observed that there was a significant difference in the NICU admission as well as APGAR score of the babies born at different gestational age of PPRM.

Our investigation revealed that the majority of preterm premature rupture of membranes (PPROM) cases occurred in women aged 19 to 34, representing 81.4% of the cases. No instances involved women under 19, while 18.6% were aged 35 or older. Gahwaghi et al.[16] Similarly found that 92% of women in their study fell within the age range of 21 to 40, with 4% below 20 years old and 4% above 40 years old. Moreover, D'souza's[17] study highlighted a higher prevalence of PPRM among younger women aged 21 to 25, constituting 44% of cases. Hackenhaar[18] recommended stratifying PPRM studies by maternal age due to evidence suggesting an increased risk in pregnant women over 29 years old, emphasizing the importance of identifying risk factors in prenatal care. Similar findings were reported by Sirak et al[19] in an African study.

A significant portion (39%) of women in our study exhibited no identifiable risk factors for PPRM, consistent with Gahwaghi et al.[16] Findings. Additionally, a quarter of participants reported a history of previous PPRM or preterm labor, akin to Gahwaghi's[16] results.

However, Al Riyami[6] reported a lower prevalence of previous PPRM. Recurrent urinary tract infections were identified as a risk factor in 13.5% of cases in our study, aligning with Gahwaghi's findings. Conversely, Hackenhaar reported a higher incidence, possibly due to their larger sample size. Vaginal infections were observed in 5.1% of cases in our study, with no

significant association found by Hackenhaar. In contrast, Shivaraju et al[20] found a strong association in their rural study. Polyhydramnios was identified as a risk factor in 5.1% of cases in our study, higher than Gahwaghi's reported incidence, possibly due to our smaller sample size. One woman underwent prenatal diagnostic procedures in our study, consistent with Gahwaghi's observations.

Our study focused on maternal complications in late PPRM cases. Most women (93.2%) experienced no complications, with no instances of chorioamnionitis. In Pakistan, Sadaf J[21] found a 10% incidence of chorioamnionitis, while recent research by Shivaraju et al[20] reported none, likely due to prophylactic antibiotics and prompt delivery. Sirak noted a 31.5% incidence of clinical chorioamnionitis in Ethiopia, with several additional complications observed. In Nigeria[8], 20% of cases had complications, with febrile patients often experiencing secondary postpartum haemorrhage. A study from Pakistan found low occurrences of intrapartum pyrexia, postpartum haemorrhage, and chorioamnionitis, possibly due to prophylactic antibiotics.[21]

In terms of newborns, the majority had birth weights between 2-2.5 kg (55.9%), with smaller percentages below or above this range. Similar distributions were noted by Sirak et al. in Africa. Apgar scores at 5 minutes showed differences among gestational age groups, with lower scores observed in infants born at 34-34+6 weeks. NICU admission rates also varied across gestational age groups, with more admissions in the 34-34+6 weeks group, consistent with Mateus et al.'s findings. The reasons for NICU admissions included hyperbilirubinemia, respiratory distress syndrome, and prematurity, aligning with previous studies.

In summary, our study underscores the importance of understanding the relationship between maternal age, risk factors, maternal complications, and neonatal outcomes in PPRM cases. Identifying these factors can inform clinical management strategies to improve outcomes for both mothers and new-borns. We recommend regular antenatal and intrapartum monitoring should be done. We expect that the findings in these studies will

contribute toward determining the optimal obstetrical management for this common pregnancy complication.

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