International Journal of Obstetrics and Gynecology Clinical Research Study (IJOCRS)

IJOCRS : Int. Jour. Obst. And Gyne. Clini. Res. Study

https://www.ijocrs.com

Volume – 1, Issue – 1, May – June 2026, Page No. : 01 – 06

Original Research Article

An evaluation and analysis of fetal maternal outcome and risk factors associated with prelabour rupture of membranes - A cross-sectional study

[1]Marcelo L. Steiner, Department of Obstetrics and Gynecology, FMABC University Center, Avenida Lauro Gomes, 2000 – Vila Sacadura Cabral, Brazil.

[2]Bianca C R Cunha, Department of Obstetrics and Gynecology, FMABC University Center, Avenida Lauro Gomes, 2000 – Vila Sacadura Cabral, Brazil.

Correspondence Author: Marcelo L. Steiner, Department of Obstetrics and Gynecology, FMABC University Center, Avenida Lauro Gomes, 2000 – Vila Sacadura Cabral, Brazil.

Open Access Article: © 2026, Marcelo L. Steiner, et al. This is an open access journal and article distributed under the terms of the creative common's attribution license (http://creativecommons.org/licenses/by/4.0). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Conflicts of Interest: Nil

Abstract

Background: Prelabour Rupture of Membranes (PROM) is a significant obstetric condition contributing to maternal and neonatal morbidity and mortality, with risk factors ranging from infections to socioeconomic status. This study aimed to evaluate fetomaternal outcomes and identify risk factors associated with PROM in a tertiary care hospital.

Methods: A hospital-based cross-sectional study was conducted over one year in the Department of Obstetrics & Gynecology, including 150 pregnant women with PROM (≥28 weeks gestation). Data collection included demographic details, obstetric history, clinical examination, CRP levels, microbiological cultures, mode of delivery, and maternal and neonatal outcomes. Statistical analysis was performed using Epi Info, with significance set at $p<0.05$.

Results: The mean maternal age was 24.7±3.69 years, with 52.67% aged 20–25 years and 54% belonging to the lower-middle socioeconomic class. Primigravidas comprised 54.67% of cases. PROM occurred most frequently at 35–36 weeks (43.33%) and ≥37 weeks (40.67%). CRP positivity was noted in 56.67% of patients. Cervical swab cultures were sterile in 31.33%, with coagulase-negative staphylococci (20%) as the most common isolate; urine cultures were sterile in 82.67%. Vaginal delivery occurred in 80% of cases, and 20% underwent LSCS, primarily for fetal distress (40%). Labour induction was required in 97.33% of cases, predominantly via Syntocinon drip (62.67%). Maternal outcomes were favorable, with 98% experiencing no complications; febrile illness (1.33%) and postpartum hemorrhage (0.67%) were rare, and no chorioamnionitis was observed. Most newborns had good outcomes: 70.67% weighed more than 2.5 kg, 99.33% had an Apgar score of 7 or higher at 1 minute, and all babies had a score of 7 or higher at 5 minutes. NICU admission was required for 3.33% of neonates, with one neonatal death recorded.

Conclusion: PROM was more prevalent among young, primigravida women from lower-middle socioeconomic backgrounds, with most cases occurring in late preterm and term gestations. Early diagnosis, antibiotic prophylaxis, and active labour management resulted in high vaginal delivery rates, minimal maternal complications, and favorable neonatal outcomes.

Keywords: Pregnant Women, Prelabour Rupture, NICU, Neisseria Gonorrhoeae, Chlamydia Trachomatis, Chorioamnionitis, Placental Abruption, Umbilical Cord Accidents, Postpartum Haemorrhage.

Introduction

Pregnancy is a unique physiological event, yet approximately 15% of women experience serious complications requiring major obstetric intervention. Among these, Prelabour Rupture of Membranes (PROM) is a significant contributor to maternal and neonatal morbidity. PROM is defined as spontaneous rupture of fetal membranes after 28 weeks of gestation but before the onset of labour. When it occurs before 37 completed weeks, it is termed Preterm PROM (PPROM), complicating about 3% of pregnancies and accounting for nearly one-third of preterm births.

PPROM is associated with multiple risk factors, including prior PROM, preterm labour, cervical surgery, polyhydramnios, multiple gestations, genital tract infections, smoking, low socioeconomic status, and poor nutrition, though the cause often remains unknown. Subclinical urinary tract infections are among the most common associated conditions. Pathophysiologically, premature rupture results from abnormal weakening of the membranes, often due to mechanical stretch, local inflammation, or ascending bacterial infection, with organisms such as Neisseria gonorrhoeae, Chlamydia trachomatis, and Group B Streptococcus implicated.

Maternal complications include chorioamnionitis, placental abruption, umbilical cord accidents, postpartum haemorrhage, and increased caesarean rates. Neonatal risks are significant, particularly in preterm cases, and include respiratory distress syndrome, sepsis, neurologic impairment, and death. The risk of ascending infection increases if labour does not begin within 24 hours of rupture.

Guidelines recommend immediate induction in term PROM to reduce infection risk, and prompt delivery in cases with intrauterine infection or fetal compromise. Given its complex etiology and potential severity, understanding the outcomes and risk factors of PROM is vital. This study aims to evaluate fetomaternal outcomes and associated risk factors in PROM cases at a tertiary care hospital.

Materials and Methods

This hospital-based cross-sectional study was conducted over one year in the Department of Obstetrics and Gynecology. The study included pregnant women with PROM admitted or attending the OPD.

Inclusion criteria

- Primigravida and multigravida women aged ≥18 years, with gestational age >28 weeks.
- Confirmed by LMP, clinical examination, and USG.
- Presence of leaking per vaginum.

Exclusion criteria

- Included women in active labour, with antepartum hemorrhage.
- Twin pregnancies
- Cord Prolapse
- Medical Comorbidities

© 2026, IJOCRS

- Meconium-Stained Liquor,
- Malpresentation,
- Unwillingness to Participate.

A minimum of 150 PROM cases were enrolled using convenient sampling. Detailed histories covered demographic data, obstetric and menstrual history, onset and characteristics of leaking, prior PROM, infections, medical and surgical history, and lifestyle factors.

General and obstetric examinations were performed, noting pallor, icterus, cyanosis, oedema, vital signs, and systemic findings. Sterile speculum examination confirmed PROM. CRP testing, cervical swab culture, and urine culture were done. Labour induction methods included dinoprostone gel, tab. misoprostol, or intravenous oxytocin drip, and induction time was recorded. Labour progress, maternal condition, and fetal wellbeing were monitored.

Post-delivery APGAR scores at 1 and 5 minutes, birth weight, neonatal complications, and maternal complications such as PPH, chorioamnionitis, or sepsis were recorded. Both mother and baby were followed until discharge.

Data were entered in Excel and analysed using Epi Info software. A p-value <0.05 was considered statistically significant.

Results

In this study of 150 pregnant women with prelabour rupture of membranes (PROM), most participants were young adults, with the majority aged 20–25 years (52.67%), followed by 26–30 years (34.67%). Over half (54%) belonged to the lower middle socioeconomic class, and 54.67% were primigravida. PROM occurred most often at 35–36 weeks gestation (43.33%), with 40.67% at term and 16% before 34 weeks. More than half (56.67%) had a positive C-reactive protein (CRP) test, suggesting underlying infection or inflammation.

Cervical swab culture results were sterile in 31.33% of cases. Among positive cultures, coagulase-negative staphylococci (20%) and gram-positive bacilli (14.67%) were the most frequently isolated organisms. Urine cultures were sterile in 82.67% of women, with only a few showing mixed organisms, Candida species, or E. coli growth.

Vaginal delivery was the predominant mode (80%), while 20% underwent lower segment cesarean section (LSCS), most commonly for fetal distress (40%), followed by meconium-stained liquor with fetal distress and non-progress of labour with fetal distress (each 16.67%). Most deliveries (80.67%) occurred within 12 hours of PROM, and 97.33% of women required induction, primarily with oxytocin (62.67%), followed by misoprostol (20%) and cerviprime gel (17.33%).

Maternal complications were uncommon, with only 2 cases (1.33%) of febrile illness and 1 case (0.67%) of postpartum hemorrhage. No cases of chorioamnionitis or wound infection were reported, likely due to timely intervention and prophylactic antibiotics.

Neonatal outcomes were largely favorable. Most babies (70.67%) weighed over 2.5 kg, with only 6% weighing between 1.5–2 kg. Nearly all newborns (99.33%) had an Apgar score ≥7 at 1 minute, increasing to 100% at 5 minutes. NICU admission was needed in just 3.33% of cases, with one neonatal death recorded.

Overall, PROM was most frequent in young, lower middle-class primigravida women, with active management resulting in favorable maternal and neonatal outcomes.

© 2026, IJOCRS

Table 1: Demographic Profile

Variables		Number	Percentage
Age (in years)	<20	11	7.33
	20-25	79	52.67
	26-30	52	34.67
	>30	8	5.33
Socioeconomic Status	Upper Middle	27	18.0
	Lower Middle	81	54.0
	Upper Lower	31	20.67
	Lower	11	7.33

Table 2: Maternal Clinical characteristics

Variables		Number	Percentage
Parity	Primi	82	54.67
	Multi	68	45.33
Gestational Age	28-31 weeks	3	2.0
	32-34 weeks	21	14.0
	35-36 weeks	65	43.33
	≥37 weeks	61	40.67
CRP Level	CRP Positive	85	56.67
	CRP Negative	65	43.33
Cervical Swab Culture	Sterile	47	31.33
	CONS	30	20.0
	Gram+ Bacilli	22	14.67
	Staph. Aureus	17	11.33
	E. Coli	6	4.0
Urine Culture	Sterile	124	82.67
	NAD	12	8.0
	Mixed Growth	6	4.0
	Candida	2	1.33
	E. Coli	1	0.67
PROM to Delivery interval	≤12 hours	121	80.67
	> 12 hours	29	19.33

Table 3: Maternal clinical Outcomes

Variables		Number	Percentage
Mode of Delivery	Vaginal Delivery	120	80.0
	LSCS	30	20.0
Onset of labour	Induction	146	97.33
	Spontaneous Labour	4	2.67
Induction Method	CP Gel	26	17.33
	Inj. Syntocinon Drip	94	62.67
	Tab. Misoprostol	30	20.00
Indication for LSCS	FD	12	40
	MSL with FD	5	16.67
	NPOL with FD	5	16.67
	Failed induction with FD	2	6.67
	Oligo. with FD	2	6.67
	PIH with oligo. with FD	2	6.67
	S. Oligo. with big baby with FD	2	6.67

© 2026, IJOCRS

Maternal Outcome	Febrile Illness	2	1.33
	PPH	1	0.67

Fetal Clinical Outcomes

Baby Weight (Kg.)	>2.5	106	70.67
	2-2.5	35	23.33
	1.5-2	9	6.0
APGAR Score	< 7	1	0.67
	≥ 7	149	99.33
NICU	Yes	5	3.33
	No	145	96.67

Discussion

This study highlights that PROM predominantly affects younger women aged 20–25 years, especially from lower middle socioeconomic backgrounds. Primigravida women were slightly more affected than multigravida, suggesting first pregnancies may carry higher susceptibility. Most cases occurred at 35–36 weeks, indicating late preterm PROM as the commonest presentation.

Vaginal delivery was the predominant mode across all gestational ages, with LSCS mainly indicated for fetal distress. The majority of deliveries occurred within 12 hours of PROM, and induction was frequently used—most commonly with oxytocin reflecting an active management approach that likely minimized maternal and neonatal complications.

Maternal complications were rare, limited to isolated febrile illness and postpartum hemorrhage, with no cases of chorioamnionitis. Neonatal outcomes were favorable, with most babies weighing over 2.5 kg and almost all achieving Apgar scores ≥7 at 1 and 5 minutes. NICU admissions were minimal, and only one neonatal death occurred.

Comparisons with other studies reveal consistent trends in age distribution, socioeconomic association, and predominance of vaginal delivery. The low complication rates in this study suggest that early diagnosis, prompt induction, infection prophylaxis, and vigilant monitoring are key to improving outcomes in PROM cases, particularly in resource-limited settings.

Conclusion

This study clearly demonstrates that PROM is more common among young, first-time mothers from lower middle socioeconomic backgrounds, with the highest number of cases occurring in the late preterm and term gestational age groups. Despite PROM being a risk factor for maternal and neonatal infections, the outcomes in this study were generally favorable due to early diagnosis, timely use of antibiotics, and active labor management. The high rate of vaginal deliveries and low incidence of complications reflect the effectiveness of these interventions.

References

1. Brian MM. Preterm Premature Rupture of the Membranes. ACOG. 2003;101:1.2.
2. Akter S, Akther R, RashidZ. Preterm prelabour rupture of the membrane and feto-maternal outcome: an observational study. J Bangladesh CollPhys Surg. 2010;28:1.
3. Bottoms SF, Paul RH, Mercer BM, MacPherson CA, Caritis SN, Moawad AHet al. Obstetric determinants of neonatal survival: Antenatal predictors of neonatal survival and morbidity in extremely low birth weight infants. Am J Obstet Gynecol.1999;180:665-9.
4. Merenstein GB, Weisman LE. Premature rupture of membranes and neonatal consequences. Semein-Perinatol .1996;20:375-80.12.
5. Noor S, Fawwad A, Shahzad H, Sultana R, Bashir R. Foetomaternal outcome in patients with or without

© 2026, IJOCRS

premature rupture of membranes. J Ayub Med Coll Abbottabad. 2010;22:164-7.

6. El-Messidi A, Cameron A. Diagnosis of premature rupture of membranes: inspiration from the past and insights for the future. J Obstet Gynaecol Can. 2010;32:561–569. doi: 10.1016/S1701-2163(16)34525-X.
7. Vogel JP, Lee AC, Souza JP. Maternal morbidity and preterm birth in 22 low- and middle-income countries: a secondary analysis of the WHO Global Survey dataset. BMC Pregnancy Childbirth. 2014;14:56. doi: 10.1186/1471-2393-14-56.
8. Mercer BM, Goldenberg RL, Meis PJ, Moawad AH, Shellhaas C, Das A, et al. The Preterm Prediction Study: prediction of preterm premature rupture of membranes through clinical findings and ancillary testing. The National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Am J Obstet Gynecol. 2000;183:738–745. doi: 10.1067/mob.2000.106766.
9. Alam MM, Saleem AF, Shaikh AS, Munir O, Qadir M. Neonatal sepsis following prolonged rupture of membranes in a tertiary care hospital in Karachi, Pakistan. J Infect Dev Ctries. 2014;8:67–73. doi: 10.3855/jidc.3136
10. ACOG Committee on Practice Bulletins - Obstetrics. ACOG practice bulletin no. 80: premature rupture of membranes. Clinical management guidelines for obstetrician-gynecologists. Obstet. Gynecol. 2007;109:1007-10.
11. Meirowitz NB, Ananth CV, Smulian JC, Vintzileos AM. Effect of labor on infant morbidity and mortality with preterm premature rupture of membranes: United States population-based study. Obstet. Gynecol. 2001;97:494-8. DOI:10.1016/s0029-7844(00)01203-5.
12. Morris JM, Roberts CL, Crowther CA, Buchanan Sl, Henderson Smart DJ, Salkeld G. Protocol for the immediate delivery versus expectant care of woman with preterm prelaboure rupture of the membranes close to term (PPROMT) trail. BMC Pregnancy Childbirth. 2006;6:9.
13. Liu J, Feng Z-C, Wu J. The incidence rate of premature rupture of membranes and its infl uence on fetal-neonatal health: a report from mainland China. J Trop Pediatr 2010;56:36–42.
14. Hackenhaar AA, Albernaz EP, da Fonseca TM. Preterm premature rupture of the fetal membranes: association with sociodemographic factors and maternal genitourinary infections. J Pediatr (Rio J) 2014;90:197–202.
15. Boskabadi H, Maamouri G, Mafinejad S. Neonatal complications related with prolonged rupture of membranes. Maced J Med Sci. 2011;4(1):93-8

© 2026, IJOCRS