


Original Research Article

# Maternal and Perinatal Outcome in Premature Rupture of Membranes at Term Pregnancy

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## Abstract

**Background:** Before onset of labour if premature rupture of membranes occurs, then it is called premature rupture of membranes. This study was conducted to evaluate the maternal and perinatal outcomes in term PROM cases.

**Materials and methods:** This was a prospective study which was conducted during May 2015 to June 2016, on 75 cases of rupture of membranes spontaneously after 37 completed weeks who were admitted in department of obstetrics and gynaecology, Osmania Medical College, Hyderabad.

**Results:** History of term PROM was seen in 15% of the patients, History of abortion was seen in 12% of the patients and history of preterm PROM was observed in 7% of patients. When risk factors and PROM were compared, anaemia was 20%, UTI was 10%, lower genital infections were 8%, cervical stich was 2%, mal-presentations were 4%, hydramnias were 4% and there were no risk factors in 27% of the patients. Favourable bishop score was observed 30 patients undergoing vaginal delivery, 10 in LSCS, and unfavourable bishop score was observed in 20 patients undergoing vaginal delivery, 9 in LSCS. Number of cases in maternal morbidity was highest in > 24 hours i.e. 26.7%, perinatal morbidity cases were highest in 12-24 hours i.e. 30% and mortality among perinatal cases were 5% in 12-24 hours and >24 hours of PROM.

**Conclusion:** This study concluded that premature rupture of membranes incidence was higher in women of unbooked cases and in those with previous history of abortions and premature rupture of membranes. The concomitant increase in incidence of maternal morbidity and perinatal morbidity and mortality with an increase in the duration of labour and delivery and thus rate of caesarean delivery was increased.

## Key words

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Premature rupture of membranes, Maternal outcome, Perinatal outcome.

## Introduction

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The rupture of membranes before labour onset is called premature rupture of membranes. Before 37 weeks of gestation completion, if rupture occurs, it is called preterm premature rupture of membranes. If the rupture occurs after 37 weeks of gestation completion, then it is called term premature rupture of membranes (PROM) [1, 2]. Term PROM is present in approximately 5-10% pregnancies. In approximately 50% of term PROM cases, labour starts spontaneously within 12 hours, in 70% of term PROM cases, labour starts spontaneously within 24 hours, 85% (48 hours) and 95% (72 hours) [3]. Term PROM associated with fetal morbidities consists of ascending infection and in utero cord compression [4]. During antenatal period, the objective of obstetrician mainly is to detect the possible factors predisposing to PROM, their effective management, correct diagnosis, thus resulting in a rise in neonatal and maternal safety and increase in rate of vaginal deliveries successfully [5]. This study was conducted to evaluate the maternal and perinatal outcomes in term PROM cases.

## Materials and methods

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This was a prospective study which was conducted during May 2015 to June 2016, on 75 cases of rupture of membranes spontaneously after 37 completed weeks who were admitted in department of obstetrics and gynaecology, Osmania Medical College, Hyderabad. The patients were selected by simple randomisation sampling techniques.

**Inclusion criteria:** patients who had gestational age of more than 37 weeks confirmed clinical examination or ultrasound, cervical dilatation of less than 3 cm, lack of uterine contractions for at least 1 hour from PROM, single live pregnancy in vertex presentation, PROM confirmed by direct visualisation or by litmus test.

**Exclusion criteria:** Patients who had gestational age of less than 37 weeks, cervical dilatation of more than 3 cm, women in labour or with uterine contractions within 1 hour of rupture of membrane, previous history of caesarean section and mal-presentations and multiple gestations.

A detailed history was taken from all the patients and patients with prelabour rupture of membranes were admitted for this study. General and Obstetric examination was done. The examination of sterile speculum was done and the presence of amniotic fluid was noted by collecting the fluid on slide and examining under microscope. Amniotic fluid culture and urine culture were done. All cases were administered with prophylactic IV antibiotics. In all the cases, a 4<sup>th</sup> hourly record of pulse of mothers, blood pressure and temperature was maintained and delivery was conducted within 24 hours. Foetal distress cases were delivered by emergency caesarean section.

## Results

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**Table - 1** shows that the age group range of 21-25 years had the highest percentage of 73.3% (55) of PROM. In the present study, primigravida was 77.3% and multigravida was 22.7% and booked cases were 20 whereas unbooked cases were 73.3%.

**Table - 2** shows that history of term PROM was seen in 15% of the patients, History of abortion was seen in 12% of the patients and history of preterm PROM was observed in 7% of patients.

**Table - 3** shows that when risk factors and PROM were compared, anaemia was 20%, UTI was 10%, lower genital infections were 8%, cervical stitch was 2%, mal-presentations were 4%, hydramnias were 4% and there was no risk factors in 27% of the patients.

**Table - 1:** Demographic distribution in the study.

Demographics	No of Patients (n=75)	%
<b>Age Distribution</b>		
15-20 years	9	12%
21-25 years	55	73.3%
26-30 years	7	9.3%
31-35 years	3	4%
More than 35 years	1	1.3%
<b>Parity Distribution</b>		
Primi	58	77.3%
Multi	17	22.7%
<b>Antenatal Care</b>		
Booked	20	26.7%
Unbooked	55	73.3%

**Table - 2:** Previous obstetric and gynaecological history versus PROM.

Variable	%
History of term PROM	15%
History of abortion	12%
History of preterm PROM	7%

**Table - 3:** Risk factors versus PROM.

Risk Factor	%
Anaemia	20
Urinary tract infections(UTI)	10
Lower genital infection	8
Cervical Stich	2
Mal-presentations	4
Hydramnias	4
No risk factors	27

**Table - 4** shows that favourable bishop score was observed 30 patients undergoing vaginal delivery, 10 in LSCS, and unfavourable bishop score was observed in 20 patients undergoing vaginal delivery, 9 in LSCS.

**Table - 5** shows that number of cases in maternal morbidity was highest in > 24 hours i.e. 26.7%, perinatal morbidity cases were highest in 12-24 hours i.e. 30% and mortality among perinatal cases were 5% in 12-24 hours and >24 hours of PROM.

## Discussion

Dr V. Revathi, et al. [6] conducted a study in which the incidence of premature rupture of membranes at term, evaluate the risk factors, risk of operative delivery, the effects and complications of premature rupture of membranes at term and its influence on maternal and perinatal outcome. The study was a prospective study where patients with confirmed premature rupture of membranes at term were recruited and monitored for progress of labour, mode of delivery and evaluated for maternal and perinatal outcome. The incidence of premature rupture of membranes was higher in women of lower socioeconomic group, unbooked cases and in those with previous history of abortions and premature rupture of membranes. The rate of caesarean delivery was increased with a concomitant increase in incidence of maternal morbidity and perinatal morbidity and mortality with an increase in the duration of labour and delivery. Shwetha Anant Mohokar, et al. [7] have conducted a hospital based prospective observational study of 100 patients of preterm premature rupture of membranes in between 28-37 weeks gestation with singleton pregnancy admitted in our tertiary care centre. In this study 45% patients went into spontaneous labour and 55% needed induction or augmentation. 65% patients had vaginal delivery and 25% required LSCS. The main indications for LSCS being malpresentation (28%) followed by foetal distress (24%). There was no maternal mortality; morbidity was found in 16% patients. Perinatal morbidity was seen in 33% and was mainly due to RDS (21%), sepsis (10%) and hyperbilirubinaemia (23%). Perinatal mortality was seen in 15% and was due to sepsis in 27%, RDS in 53% and birth asphyxia in 20%. Hailemariam Segni, et al. [8] reported that incidence of premature rupture of membrane was 14.6%. Gestation age less than 37 weeks account 42 (1.5%). Mother who admitted to maternity ward for conservative management stayed as minimum 4 days and maximum 33 days. Contributing factor for neonatal admission to intensive care unit by

Multivariate analysis show that delivery before 34 weeks more contribute for NICU admission RR 4 (p=0.000) when compare to that of duration of rupture of membrane. Contributing factors for increasing poor post-partum maternal outcome by univariate analysis were PROM > 12 hours RR 1.8, P=0.011 and those monthly income ≤ \$1.9, RR, 0.69, (p, 0.108). By multivariate analysis PROM > 12hours RR 1.9, P=0.015 was significantly increase poor maternal outcome those compare to monthly income ≤ \$1.9, RR, 0.69, (p, 0.108). Most patients with gestational age ≤ 34 weeks delivered after 12 hours PROM for the reason of conservative inpatient management. The maternal hospital stays were significantly related with duration of rupture of membrane with R = 4.9 (p=0.028). Tigist Endale, et al. [9] reported that of the 4 525 women who gave birth in the hospital, 202 were

complicated by term PROM. About 22.2% of the women showed unfavorable maternal outcomes. The most common cause of maternal morbidity and mortality was puerperal sepsis. About 33.5% of neonates experienced unfavorable outcomes. The duration of PROM >12 hours (AOR=5.6, 95% CI 1.3–24.1) latency >24 hours (AOR=2.8, 95% CI 1.7–11.8), residing in rural areas (AOR=4.2, 95% CI 3.96–29.4) and birth weight less than 2 500 g were associated with unfavorable outcomes. Arnab Mondal, et al. [10] reported that the incidence of puerperal hemorrhage, LBW babies, prematurity, maternal morbidities, chorioamnionitis, perinatal mortality and neonatal morbidities were significantly higher in PROM cases. These results corroborated with the findings of other researchers most of the time.

**Table - 4:** Bishop score and delivery mode in PROM.

Bishop score	Vaginal delivery	LSCS	Total
Favourable score	30	10	40
Unfavourable score	20	9	29
Total number of cases	50	19	69

**Table - 5:** Maternal and perinatal morbidity and perinatal mortality versus PROM.

Duration of PROM	Total no. of cases	Maternal morbidity cases	Percentage
<12 hours	---	1	1.3%
12-24 hours	---	5	6.7%
> 24 hours	---	20	26.7%
Duration of PROM	Total no. of cases	Perinatal morbidity cases	Percentage
<12 hours	10	1	10%
12-24 hours	20	6	30%
> 24 hours	40	10	25%
Duration of PROM	Total no. of cases	Perinatal mortality cases	Percentage
<12 hours	10	0	0
12-24 hours	20	1	5%
> 24 hours	40	2	5%

## Conclusion

This study concluded that premature rupture of membranes incidence was higher in women of unbooked cases and in those with previous history of abortions and premature rupture of membranes. The concomitant increase in incidence of maternal morbidity and perinatal

morbidity and mortality with an increase in the duration of labour and delivery and thus rate of caesarean delivery was increased.

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