



Study Of Risk Factors For Preterm Premature Rupture Of Membranes Among Antenatal Women And Their Maternofetal Outcome

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background :This prospective observational study was done to understand the possible risk factors of PPRM and their maternal and fetal outcome.

Methods:All pregnant women admitted with a diagnosis of PPRM and those who met the inclusion criteria during the study period were taken as study participants after getting informed consent. Detailed history was taken to assess the risk factors of PPRM.A thorough general physical examination and obstetric examination was done ,relevant investigations were sent and were put on conservative management of PPRM .Mode of termination of pregnancy ,maternal and fetal complications were also monitored. Result: Urogenital infections was found to be the most common risk factor followed by multiparity. Maternal and neonatal morbidity was more with increasing duration of PPRM to delivery and infections of female genital tract .Prolongation of latent period showed decreased incidence of RDS, whereas increases the chances of sepsis in neonate. Perinatal morbidity and mortality were more with decreasing gestational age at PPRM and low birthweight. No maternal mortality was seen in this study.

Conclusion: Vigilant antenatal monitoring ,recognition and appropriate treatment of infections and other risk factors of PPRM, strict aseptic precautions, suitable therapy are important aspects in the prevention and management of PPRM.

Keywords: PPRM,RDS,Sepsis,Tocolysis.

Introduction

A Preterm premature rupture of membranes (PPROM) is defined as the onset of amniotic fluid leakage from the vagina before the onset of uterine contractions at less than 37 weeks of gestational age.¹

Aim

To study the risk factors of preterm premature rupture of membranes among pregnant women and their maternofetal outcome in a tertiary care hospital in South Kerala.

Objectives

1. To study the risk factors causing preterm premature rupture of membranes among pregnant women.

Sample Size:

2. To find out the maternofetal outcome in preterm premature rupture of membranes.

Methodology

Study design: Prospective observational study

Study Setting: Patients admitted with PPRM under the Department of Obstetrics and gynecology at Tertiary Health Centre in Kerala.

Study participants: All patients admitted with PPRM (28 to 36weeks+6days of gestation) were included after getting informed consent.

$$N = Z_{21-\alpha/2} * p * (1 - p) / d^2$$

$Z_{1-\alpha/2}$ - two tailed probability for 95% confidence interval = 1.96 p (%) –proportion of previous history of PPRM = 0.038

d (%) - precision or allowable error for proportion of previous history of PPRM = 0.05

$$N = 1.96^2 * 0.038 * (1 - 0.038) / 0.05^2 \quad N = 56.17$$

Thus, the total sample size required for the study is 56

Anticipating a non-responsive rate of 10% total sample size will be taken as 62.

Study Period: 18 months after ethical committee clearance (November 2020 to May 2022)

Inclusion Criteria:

1. All pregnant women with pregnancy between 28 to 36weeks+6days of gestational age with PPRM
2. Primi/Multi gravida
3. Singleton/Twin pregnancy
4. Malpresentations
5. Polyhydramnios
6. Mother with diabetes mellitus
7. Mother with PIH / Pre-eclampsia
8. Confirmation of PPRM by speculum examination

Risk Factors For Pprom

Table 15: Risk factors distribution

Risk factors	No. of patients	Percentage
No risk factors	25	40.3
Malpresentation	4	6.5
Polyhydramnios	1	1.6
Twin gestation	1	1.6
UTI	6	9.7
Lower genital tract infection	18	29.0
Gestational diabetes mellitus	3	4.8

Exclusion Criteria:

PROM less than 28 weeks and more than 37 weeks
IUD

Results

In this study, the highest number of patients with PPRM were in the age group between 21-25 years (54.8%)and 38.7% of the patients with PPRM were primigravida whereas 61.3% were multigravida, the most common gestational age group with PPRM was between 35-36+6 weeks contributing 61.3% of the total study population. Out of 62 patients, 19 patients had caesarean section.

Most common indication for caesarean section in this study was fetal distress (47.4%), followed by severe oligohydramnios (21.1%) and previous CS (15.8%).In the present study, the majority (46.8%) of patients with PPRM delivered babies of birth weight between 2.1-2.5kg. Out of 62 patients, only 16 patients (25.8%) had babies of birth weight >2.5kg,the rest 74.2% of patients had low birth weight (<2.5kg) babies; of which 8.1% of patients had very low birth weight (<1.5kg) babies.

Previous history of PPRM	3	4.8
History of cervical encirclage	1	1.6
Total	62	100.0

In the present study, no maternal complications were seen for 79% of cases of PPRM. For those who had complications; the most common complication found in this study was wound infection (8.1%) 2 patients had post-cesarean wound infection & 3 had episiotomy site infection), followed by chorioamnionitis (6.5%). Rest of 6.4% had abruptio placenta & puerperal pyrexia (3.2% for each).

In the present study, fetal distress was the most common indication of CS for 35-36+6 weeks gestational age groups (61.5%). Severe oligohydramnios was the second most common (30.8%) indication of CS for 35-36+6 weeks groups. Previous CS was the most common indication among 32-34+6 weeks gestational age groups (50%). p value = 0.007; Statistically significant.

Out of 62 newborns, neonatal morbidity was 22.6%. The most common complication was birth asphyxia (8.1%), followed by jaundice which had 6.5% of the newborns, RDS & sepsis in 3.2% of neonates and 1.6% were complicated by IVH. In this study, CRP positivity was more commonly found among patients who had a long duration of membrane rupture. It was 83.3% in patients with >72hr latent period. p-value = 0.001; Statistically significant

Discussion

In this study, a greater number of patients with PPRM were in the age group between 21-25 years (54.8%) followed by 26-30 years of age group (22.6%). A similar result was obtained in a study conducted by Piya Ray done at R.G. Kar Medical College, Calcutta; 62% were at 20-25 years and 20% were at 26-30 years of age group². The majority of cases in this study were belonging to lower socio-economic status (58.1%). This is comparable to the study of Swathi Pandey & Shehla Noor which was 61% and 68.2% respectively.^{3,4}

PPROM is found more in multiparous women (61.3%) than Primigravida (38.7%) in this study. A

similar result is obtained in a study done by Akter et al., where multigravida were 62% & primigravida were 38%.⁶

Majority of patients with PPRM had normal vaginal delivery (64.5%). Caesarean section rate was 30.6% which was similar to a study conducted by Shadma Khan; in which 35% of patients with PPRM had caesarean section.⁷ Most common indication of caesarean section was foetal distress (47.4%) followed by severe oligohydramnios (21.1%), previous CS (15.8%), CPD (10.5%) and malpresentation (5.3%). In studies conducted by Swathi Pandey, Shadma Khan and Singhal, also foetal distress was the most common indication for LSCS.^{3,7,8} Lower genital tract infection was the most common risk factor for PPRM (29%), followed by UTI (9.7%) and malpresentation (6.5%). Similar results were obtained in studies conducted by Surekha S Mohan and Shadma Khan.^{6,7}

The most common maternal complications were wound infection (8.1%) and chorioamnionitis (6.5%). Maternal morbidity in this study was 21%. Similar results were obtained in studies done by Kodkany and Anjana Devi.^{9,10} Neonatal morbidity in this study was found to be 22.6%. Most common cause of neonatal morbidity was birth asphyxia (8.1%), followed by jaundice (6.5%). Sepsis and RDS was seen in 3.2% of neonates each and IVH is complicated by only 1.6% of newborn. These results obtained were nearly similar to the results in the study by Sailaja Surayapalem et al, where perinatal morbidity was 26% and the most common causes were birth asphyxia (14%).¹¹ Neonatal complications were increased with a decrease in gestational age at PPRM. It was 5.3% at 35-36+6 weeks gestational age groups, increased to 47.4% at 32-34+6 weeks gestational age groups, and was maximum at 28-31+6 weeks. When comparing this study with the studies done by Shweta Avinash and Shadma Khan, similar results were found.^{7,12} Perinatal mortality

was 3.2% of which 50% were due to sepsis and the other 50% were due to RDS. All the babies who had mortalities were born as early preterm. The study by Anjana Devi showed perinatal mortality of 5% which is comparable to this study.¹⁰ Whereas study by Swathi Pandey showed perinatal mortality of 12% with sepsis 25% and birth asphyxia 25%; which was higher compared to the present study.³

Conclusion

PPROM is a significant obstetric problem. It is one of the common causes of preterm delivery. It is associated with increased maternal morbidity as well as perinatal morbidity and mortality.

Vigilant antenatal monitoring, recognition and appropriate treatment of infection are necessary. Strict aseptic precautions, suitable therapy, regular antenatal follow-up are important aspects in the prevention and management of PPRM.

Multiparity is another risk factor for PPRM it may be due to continuing infection, previous history of PPRM, preterm birth, spontaneous abortions, or trauma to the cervix and patulous os.

C-reactive protein is an important measuring tool to evaluate for the evidence of infection in patients with PPRM.

The rate of caesarean section was not high with reference to PPRM and indications being fetal distress (most common indication), severe oligohydramnios, previous CS and malpresentation.

Maternal and neonatal morbidity was associated with increased duration of PROM to delivery and infection of the female genital tract. Prolongation of latent period decreases the incidence of RDS, whereas increases the chance of sepsis in neonates. Perinatal mortality is also increased with the duration of PPRM, this is mainly due to sepsis. The danger of infection to both mother and fetus increases with the duration of PPRM. Perinatal morbidity and mortality were more with decreasing the gestational age at PPRM and low birth weight. No maternal mortality was seen in this study.

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