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Original Research Article

A Prospective Study of Feto-Maternal Outcome in PPROM Patients in a Tertiary Care Center

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Abstract:

Background: Preterm premature rupture of membranes (PPROM) is when the foetal membranes spontaneously rupture before 37 weeks of gestation. 3% of pregnancies result in PPROM.

This research examines the feto-maternal outcome in women who experienced preterm premature rupture of membranes (PPROM) between 28 and 36 weeks+6 days of pregnancy.

Materials and Methods: This prospective study was conducted between January 2022 to December 2022 involving 120 singleton pregnancies between 28wks and 36week+6days gestation with PPROM. Detailed history of the patient and examination was done. Each patient was monitored until birth, and the fetomaternal result was documented.

Results: The incidence of PPROM in this study is 5.74%. 56.66% belongs to the age group of 19-25yrs and 72.5% are in the gestational age of 34 to 36wks+6days. 68.33% has normal vaginal delivery and rest has undergone lower segment caesarean section(LSCS) and most common indications for LSCS are fetal distress and failure to progress. While analysing the maternal morbidity 1.66% has chorioamnionitis and abruption of placenta and 3.33% has febrile illness. Patient with chorioamninitis are followed with CRP and TLC. The fetal survival is 100% at >32wks of gestation. There is 34.16% NICU admission rate and fetal mortality is 0.83%. conservative treatment with prophylactic antibiotics, steroids and magnesium sulphate(MgSO4) has reduced the feto maternal morbidity and mortality.

Conclusion: Prophylactic antibiotics, steroids, and MgSO4 are effective conservative treatments that lower fetal-maternal morbidity and mortality. However, the early indication of chorioamnionitis should prompt consideration of pregnancy termination.

Keywords: Preterm Premature Rupture Of Membrane, Lower Segment Caesarean Section, Feto Maternal Morbidity And Mortality, Total Leukocyte Count, C Reactive Protein.

Introduction

Preterm premature rupture of membranes (PPROM) is defined as the spontaneous rupture of amniotic membranes before the start of labour and before the completion of 37 full weeks of pregnancy (36 weeks+6 days). It is one of the most common cause of prematurity contributing to 30 to 40% of preterm births.[1] The incidence of PPROM is 3%. About 2-4% of singleton pregnancies and 7–20% of twin pregnancies are complicated by PPROM.[2] Prematurity and its effects are the main causes of PPROM, which is a significant contributor to perinatal morbidity and mortality. Perinatal morbidity is because of perinatal infections, respiratory distress syndrome, intraventricular haemorrhage, cord prolapse, cord compression because of oligohydramnios. Chorioamnionitis, an unfavourable cervix, dysfunctional labour, an increase in caesarean section rates, postpartum haemorrhage (PPH), abruption, and endometritis all enhance maternal morbidity.

Because of the use of prophylactic antibiotics, steroids and magnesium sulphate, there is significant improvement in feto-maternal outcome. The present prospective study is done to know the feto-maternal outcome in PPROM patients admitted in the labour room and antenatal ward.

Materials and Method

This prospective study was carried out in the Department of Obstetrics and Gynaecology in

collaboration with the Department of Paediatrics in a tertiary care center at Dr. Moopen's Medical college, Meppadi, Wayanad, Kerala. The study was conducted among pregnant woman attending the antenatal clinics, labor room, and antenatal ward with PPROM between 1st of January 2022 to 31st December 2022.

Inclusion Criteria:

In this study, singleton gestations between 28 and 36 weeks + 6 days are include.

Exclusion Criteria:

Pregnancy-related complications such gestational hypertension (Preeclampsia), multiple gestations, polyhydramnios, and medical conditions like severe anaemia, heart disease, hypertension, and diabetes mellitus were excluded from the study, as well as those with severe congenital foetal malformations.

Methods

All PPROM patients are initially admitted to the labour room for a thorough maternal and foetal work-up. A prefilled proforma was used to record the patient's profile, gestational age in weeks, antenatal history, length of premature rupture of membranes (PROM), and associated problems. To confirm the PPROM diagnosis, a thorough general, physical, systemic, and obstetric examination is performed. Before starting antibiotics, a high vaginal swab is collected for culture and sensitivity testing. Unless the lady is in active labour, no per vaginal examination was performed. In order to evaluate the foetal growth, biometry, placenta, and amniotic fluid volume, a baseline obstetric ultrasound was performed. Transferred to the prenatal ward were those who were not in labour and scheduled for conservative therapy. Conservative treatment was continued until 34 full weeks of gestation.

Initial management included four doses of steroids 6mg of dexamethasone 12 hours apart OR two doses of betamethasone 12mg, 24hrs apart, if pregnancy was less than 34 weeks gestation, if pregnancy is between 28 to 32wks of gestation along with steroids neuroprotection with MgSO4 was initiated, loading dose of 4gm iv in 100ml of NS with maintenance dose of 1gm/hr for 24hrs, prophylactic antibiotics injection ampicillin 1 gm, 6th hourly for 48hrs. Oral erythromycin 250 mg qid is given after 48 hours for 5-7 days till the swab culture data are obtained. According to the results of the high vaginal swab (HVS), antibiotics are modified. Depending on the bishop's score, a pregnancy can be ended at 34 weeks with oxytocin or misoprostol. The weekly estimation of liquor volume was done by ultrasound, along with daily vitals monitoring, obstetric examination, daily estimation of vulval pad leakage, and foetal growth assessment. Every week, HVS was sent, and TLC/dLC are completed twice a week. If two or more of the subsequent clinical characteristics were present, clinical chorioamnionitis was believed to be present. Uterine discomfort, purulent vaginal discharge, or foetal tachycardia, associated with maternal pyrexia (102° F). If an infection is found, delivery is sped up and antibiotic use was increased. The placenta and placental membranes were sent for histopathological analysis and culture sensitivity testing, respectively, after birth. Sepsis symptoms are monitored in the infant and mother. Fever, tachycardia, lower abdomen discomfort, leucocytosis, and a positive high vaginal swab culture were all indicators of postpartum sepsis in the mother. Neonatal sepsis and accompanying consequences, such as respiratory distress syndrome (RdS), necrotizing enterocolitis, intraventricular haemorrhage, and others, were constantly monitored in new borns.

Results

Total number of deliveries are 2091 during the study period. Out of this 120 women with singleton pregnancy between 28 and 36 weeks+6 days had PPROM. The incidence of PPROM is 5.74%. The 56.66% of women are in the age group of 19-25 years and 5.83% of women are > 35yrs. The mean age is 24.6 yrs. More than 50% are primigravidae. The 72.5% of women are in the gestational age of 34 to 36 wks+6 days. 6.66% are between 28-32 weeks of gestation, rest are between 32-34wks of gestational age. The 73.33% of women in the study group are lower socioeconomic status.

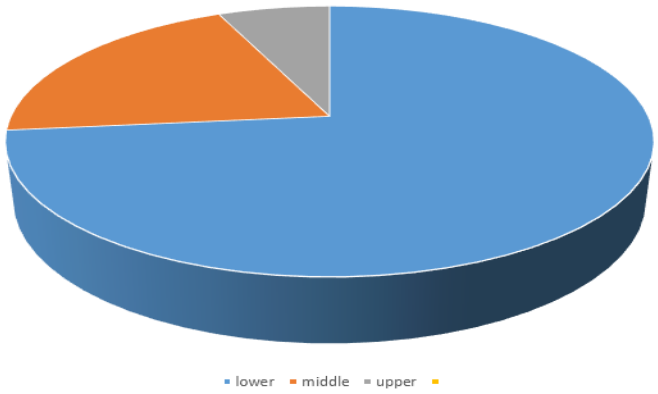
80 % of women are admitted within 5hrs of PROM and 20% are admitted after >5hrs but within 12hrs of PROM. Thus the majority of women got admitted to hospital at earliest of onset of PPROM.

Table 1 Age distribution

Age distribution	Frequency	Percentage
19-25yrs	68	56.66
26-30yrs	27	22.50
31-35yrs	18	15
>35yrs	7	5.83

Table 2: Socioeconomic status

Socio economic status	Frequency	Percentage
lower	88	73.33
middle	24	20
Upper middle	8	6.66



Graph 1: Socioeconomic status

Table 3 Gestational age

Gestational age	Frequency	Percentage
28-32wks	8	6.66
32-34wks	25	20.83
34-36wks+6days	87	72.5

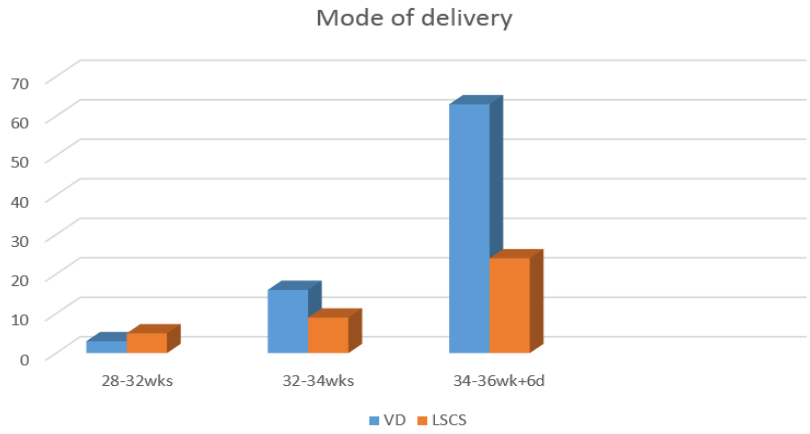
The most common organism isolated in HVS are Candida albicans (35.71%), followed by MRSA and E.Coli (21.42%),Coagulase negative staphylococcus aureus (14.28%).
In 88.3% culture and sensitivity does not reveal any growth.

Table 4: Organism of high vaginal swab

HVS	Frequency	Percentage
E.Coli	3	21.42
Candida albicans	5	35.71
MRSA	3	21.42
Coagulase _ve Stap.aureus	2	14.28
Enterococcus	1	7.14

Table 5 Mode of delivery

GA	Total	VD	LSCS
28-32wks	8	3	5
32-34wks	25	16	9
34-36wks+6days	87	63	24



Graph 2

Majority 68.33 % of patients delivered vaginally. 31.66 % are delivered by lower segment caesarean section.
The indication for caesarean section are 50%fetal distress,44.73% failure to progress.

However chorioamnionitis is observed in only 1.66% of cases. 3.33 % of women has febrile illness. 17.5% has raised TLC, 15% has raised CRP.

Table 6: Maternal morbidity

Maternal	Frequency	Percentage
Chorioamnionitis	2	1.66
Febrile illness	4	3.33
UTI	14	11.66
PPH	1	0.83
APH	2	1.66
Operative	38	31.66
Raised CRP	18	15
Raised TLC	21	17.5

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Table 7: Fetal morbidity and mortality

Fetal	Frequency	Percentage
Healthy	79	65.83
Birth asphyxia/ RDS	35	20.16
septicemia	11	9.16
NICU admission	41	34.16
Mortality	1	0.83

Table 8: birth weight

Birth wt.	Frequency	Percentage
< 1.5kg	19	15.83
1.5- 2.0 kg	22	18.33
2.0- 2.5kg	36	30
>_2.5kg	43	35.83

In terms of neonatal morbidity and death, 20.16% of infants has RDS or birth asphyxia, and 9.16% has septicemia. Of new born babies 35.83 % weighed more than 2.5kg. Whereas 15.83 % of babies has birth weight of less than 1.5kg.

The total NICU admission rate is 34.16 %, whereas neonatal mortality is 0.83%. The mortality is in the gestational age between 28-32wks. Severe new born infection, respiratory distress, and pulmonary hypoplasia are the causes of mortality. NICU admission are significantly higher in early PPROM patients almost 100% between 28-32 wks. and 46.34 % between 32-34wks of gestational age.

Discussion

PPROM complicates 2% of all pregnancies and contributes to 30-40% of all preterm birth.[1]

In the current study incidence is 5.74% which is comparable to other studies reported in the literature.[2] In women with PPROM at <34wks of gestation, there is high risk of prematurity and sepsis for both mother and fetus. In late PPROM nearing to term has insignificant adverse effects on mother and fetus.[3] However use of prophylactic antibiotics, steroids and MgSO4 used in conservative management has proven beneficial to mother and fetus.[4,5]

In the study the incidence of maternal complications like infection, morbidity is low compared to that reported in the literature.[6,7]

This implies relative safety of conservative management in women with PPROM with –ve initial vaginal culture. With the use of prophylactic antibiotics infectious complications can be further reduced.

However women with +ve culture should be treated according to sensitivity report and should be followed up with TLC and CRP. Recent research indicates that CRP is a very sensitive metric for predicting infectious morbidity in pregnancy, namely chorioamnionitis.[8]

Neonatal outcomes are also favourable in late PPROM of >34wks, it is comparatively poorer in early PPROM patients and perinatal mortality rate is 0.83% [9]. fetal survival is 100% at >32 wks. This is because of use of antenatal antibiotics, steroids and MgSO4 and improved NICU care.[10]

Therefore, managing PPROM involves evaluating the risks and advantages of conservative control. Conservative treatment with prophylactic antibiotics, steroids and MgSO4 has reduced the feto maternal morbidity and mortality,[11] however termination of pregnancy should be considered after completion of 34wks of gestation and also earliest suspicion of chorioamnionitis.

Conclusion

Steroids, MgSO4, and prophylactic antibiotics all work well as conservative treatments to reduce fetal-maternal morbidity and mortality. But the early sign of chorioamnionitis should make pregnancy termination a possibility.

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