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Perinatal Outcome in Term Prelabour Rupture of Membranes – An Observational Study

[1]Dr Ragini Garg, PG Student, Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

[2]Dr. Reena Pant, Senior Professor, Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

[3]Dr. Aparna Sharma, Associate Professor, Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

[4]Dr. Arti Soni, Senior Resident, Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

Corresponding Author: Dr Ragini Garg, PG Student, Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur

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Abstract

Introduction: Prelabour rupture of membranes is the most challenging and controversial obstetric dilemma which occurs even in low risk pregnancies and can convert a traditional pregnancy into a high risk situation for both mother and fetus. As prelabour rupture of membranes is an obstetric condition associated with significant perinatal morbidity and mortality, so the purpose of this study is to analyze the perinatal outcome in prelabour rupture of membranes.

Methods: This observational study was conducted in department of Obstetrics & Gynecology, in a tertiary care institute located in central India, over a period of 12 months.125 patients who were diagnosed with PROM were studied in terms of increased perinatal morbidity and mortality. Data was studied and statistically analyzed.

Results: Perinatal morbidity was seen in 28.8% of cases in which clinical early onset neonatal infection was the commonest cause(12%) followed by Respiratory distress(8%).No perinatal mortality was seen in the study.

Conclusions: Major impact of PROM was found to be increased perinatal morbidity (28.8%). Neonatal morbidity was seen to be increased due to clinical early onset neonatal infection followed by respiratory distress.

Keywords: Premature rupture of membranes (PROM)

Introduction

Membrane rupture usually occurs during active phase of normal labour. Premature rupture of membranes is an enigmatic condition, associated with a high risk of maternal and neonatal morbidity and mortality. It is characterized by spontaneous rupture of chorioamnion before the onset of uterine contractions, which leads to progressive cervical dilatation. It occurs in approximately 8% of all pregnancies. In developing countries, the incidence of premature rupture of membrane is about 18-20%.[1-2] Neonatal morbidities are mainly due to infection. Umbilical cord compression and cord prolapse may occur in PROM. PROM is associated with 20% of neonatal deaths.[3]

Risk factors for PROM are previous history of PROM, low body mass index, concomitant infection of gestational tissues, tobacco smoking and nutritional deficiencies of zinc, copper and ascorbic acid.[4]Rupture of

membranes is found to be related with bacterial infection, low body mass index and inadequate weight gain, during pregnancy.[5] It is found to be more common in low socio-economic class patients with inadequate prenatal care. Neonatal complications include early onset neonatal infection, birth asphyxia, hyperbilirubinemia, late onset sepsis, and congenital pneumonia. Even though,most cases of PROM are idiopathic and unpreventable, close monitoring with timelyintervention and good neonatal set up can contribute significantly to reduce perinatal morbidities and mortalities.

Most cases of PROM can be diagnosed on the basis of the patient's history and physical examination. Examination should be performed in a manner that minimizes the risk of introducing infection. The diagnosis of membrane ruptures is typically confirmed by the visualization of amniotic fluid passing from the cervical canal and pooling into the vagina. Management of PROM is not clear, main uncertainty is related to induction of labouror expectant management. The key to the management of rupture of membranes is accurate assessment of gestational age, fetal position, presence or absence of chorioamnionitis and fetal heart rate monitoring.

Premature rupture of membranes is the most challenging and controversial obstetric dilemma which occurs even in low risk pregnancies and can convert a traditional pregnancy into a high risk situation for mother as well as fetus. The present study aims to determine the perinatal outcome in prelabour rupture of membranes, especially in the context of developing countries, to help in formulating effective intervention strategies and minimize complications.

Material and Methods

Study Type: Descriptive type of Observational study

Study Design: Hospital based prospective study

Study Period: From December 2022 till desired sample size is reached.

Study Universe: All women admitted in labour room of Obstetrics and Gynaecology department

Study Population: All women with diagnosis of pre-labour rupture of membranes at or more than 37 weeks of gestation

Inclusion Criteria

Women admitted with Prelabour rupture of membranes ≥37 weeks of gestation, singleton pregnancy with vertex presentation

Cervical dilatation of < 3cm

Lack of uterine contractions for at least 1 hour of PLROM

Reactive non-stress test

Women who understand and are willing to give written and informed consent

Women not participating in any other study

Exclusion criteria

Meconium-stained liquor

Previous LSCS

Contracted pelvis / cephalopelvic disproportion

Any medical disorder

Any complication of pregnancy- Gestational diabetes mellitus, hypertensive disease of pregnancy

Methods: A detailed history was obtained regarding age, parity, socio-economic status, antenatal checkup, duration of rupture of membranes, colour of liquor, odour of liquor and onset of labour pain. Progress of labour was monitored and the outcomes were seen –Neonatal birth weight, Birth asphyxia – moderate/severe, NICU admission - Duration, Outcome, Sepsis - Early onset/late onset.

Observation and Results

In the present study, maximum 51(40.8%) women have neonates of 2.6-3.0 birth weight, followed by 43(34.4%)

neonates of 2.0-2.5 kg, and four (3.2%) neonates of less than two kg of birth weight and a significant proportion (28.0%, 36/125) of neonates were admitted in the NICU. In current study, almost three fourth (71.2%, 89/125) of neonates were healthy, and rest 36(28.8%) were morbid. Out of 36 morbid neonates, early onset sepsis was present in 15(41.7%), followed by 10 (27.8%) cases of respiratory distress, and least four (11.1%) neonates with hypoglycemia were present. And no case of neonatal mortality was seen. Among women with less than 16 hours of rupture of membranes to delivery interval, 17.2% faced neonatal morbidity, with 16-24 hrs of rupture of membranes to delivery interval, 26.1% faced morbidity and among women with ≥24 hrs of rupture of membranes to delivery interval, 66.7% faced morbidity. This increase in proportion of neonatal morbidity with increases in time to rupture of membranes to delivery interval was statistically significant ($p<0.05$).

Table 1:

Neonatal birth weight	Number	Percentage
<2 kg	4	3.2
2.0-2.5 kg	43	34.4
2.6-3.0	51	40.8
3.1-3.5	20	16.0
>3.5	7	5.6
Total	125	100.0

Graph 1:

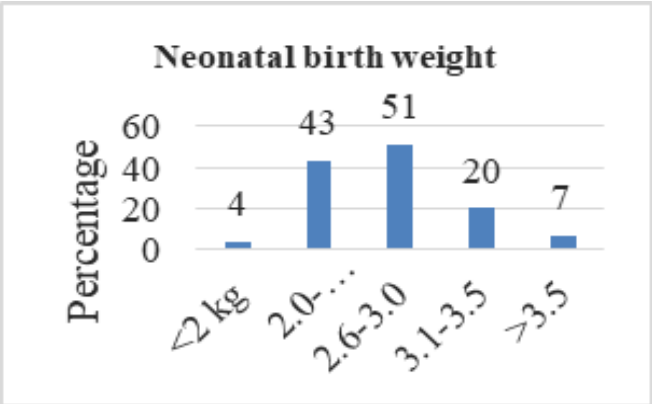


Table 2:

NICU admission	Number	Percentage
No	89	72.0
Yes	36	28.0
Total	125	100.0

Graph 2:

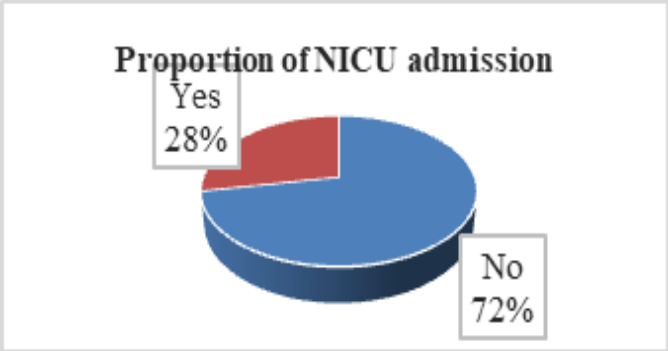


Table 3:

Neonatal outcome	Number	Percentage
Healthy	89	71.2
Morbid	36	28.8
Total	125	100.0

Graph 3:

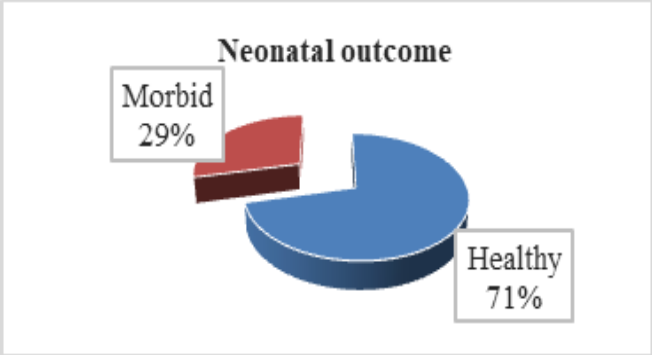


Table 4:

Type of neonatal morbidity	Number	Percentage
Early onset sepsis	15	41.7
Respiratory distress	10	27.8
Neonatal Jaundice	7	19.4
Hypoglycemia	4	11.1
Neonatal mortality	0	0
Total	36	100.0

Graph 4:

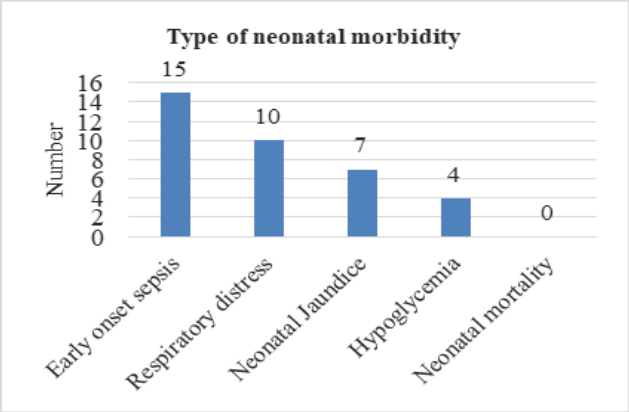
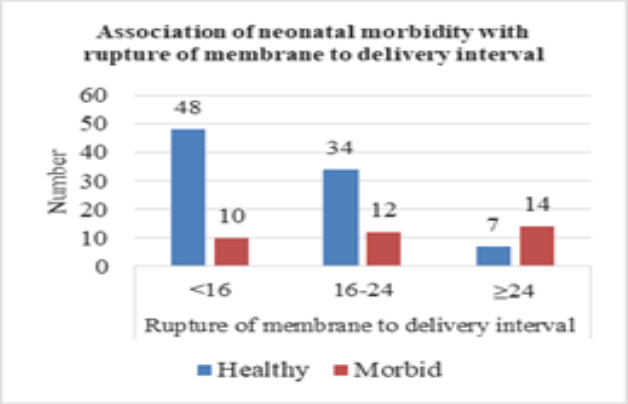


Table 5:

Neonatal morbidity	Rupture of membrane to delivery interval		
	<16	16-24	≥24
Healthy	48(82.8)	34(73.9)	7(33.3)
Morbid	10(17.2)	12(26.1)	14(66.7)
Total	58(100)	46(100)	21(100)

Graph 5:



Discussion

In the present study, maximum 51(40.8%) women have neonates of 2.6-3.0 birth weight, followed by 43(34.4%) neonates of 2.0-2.5 kg, and four (3.2%) neonates of less than two kg of birth weight. Average birth weight of babies in our study was 2.70 Kg with standard deviation of 0.467 % of babies were low birth weight .Study done by Chhangte et al[6] observed mean birth weight to be 2.9±0.3 Kg . Most of the babies were of normal weight and 4% belonged to low birth weight. Out of 36 morbid neonates, early onset sepsis was present in 15(41.7%), followed by 10 (27.8%) cases of respiratory distress, and least four (11.1%) neonates with hypoglycemia were present and no case of neonatal mortality was seen. Foetal morbidity always increases with PROM to delivery interval. There was no perinatal mortality in our study. This coincides with the findings of study done by Jaiswal et al[7] , Suryapelm et al[8], Shrestha et al[9]. Jaiswal et al[7] found perinatal morbidity in 30% cases, early onset infection in 23% cases, birth asphyxia in 6.19% cases, hyperbillirubinemia in 2.86% cases, late onset sepsis in 0.95% cases, congenital malformations in 0.48% cases , congenital pneumonia in 0.48% cases, and perinatal mortality in 1.43% cases. Perinatal mortality was due to birth asphyxia and multiple congenital abnormalities. Study done by chhangte et al[3] - 6 neonates were admitted in NICU . Early onset of sepsis in 2% cases, birth asphyxia in 2% cases, transient tachypnoea of new born and neonatal jaundice in 1% cases.

Study done by Surayapalem et al[8] recorded 26% perinatal morbidity with birth asphyxia causing the maximum 14% cases; other less common were septicemia 4% , umbilical cord sepsis 2%, convulsions 3%, LRTI and malformations 1% each ,meconium aspiration syndrome 0.5% . Perinatal mortality was 3%. Shrestha SR et al[9] ,a prospective hospital based case control study reported fetal distress in 5 cases in PROM and neonatal infection in 24% cases in PROM. Among 24 cases of neonatal infection, septicemia was seen in 15 cases, pneumonia in 7 cases, and meningitis in 2 cases with no perinatal mortality.

Conclusion

In the present study we concluded that neonatal morbidity was associated with increased duration of PROM to delivery interval in our study. Prediction of these morbidities is an important step in the management

of infection associated with PROM. Hence an appropriate and accurate diagnosis of PROM is essential for favorable outcome in pregnancy. Antenatal cases should be educated regarding regular and timely antenatal checkup. The obstetrician and neonatologist should work as a team to ensure optimal care for mother and neonate.

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