

Maternal and Perinatal Outcome in Term Premature Rupture of Membrane

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Abstract

Introduction: Term premature rupture of membrane is defined as the spontaneous rupture of foetal membrane after 37 completed weeks and before labour onset. One of the most important functions of the membrane is to remain intact until the onset of labour at term in order to maintain the protective intrauterine fluid environment, the amniotic fluid upon which foetus depends for its survival in utero. PROM complicates the pregnancies and leads to many complications. It increases the risk of prematurity and leads to other perinatal and neonatal complications with risk of foetal death. **Aims and Objectives:** - 1. To study the outcome of labour in PROM. 2. To study maternal complications in PROM. 3. To evaluate perinatal outcome in PROM. **Material and Methods:** Total 100 patients of PROM in between 37-40 weeks gestation were selected. This is retrospective study for duration of 2 years in ACPM Medical College. **Results:** In this study 34 patients went into spontaneous labour and 40 patients needed induction or augmentation. Incidence of LSCS was 26% & vaginal delivery was 74%. Maternal morbidity was found in 7%. Perinatal morbidity & mortality were significantly increased mainly due to Jaundice, RDS, sepsis and birth asphyxia. **Conclusions:** PROM is a significant obstetrics problem which lead to increased maternal

complications, operative procedures, neonatal morbidity and mortality. Careful antenatal monitoring, Strict aseptic precautions, appropriate therapy, identification of risk factors like cervico-vaginal infection and their management and regular antenatal follow-up are important factors in the prevention and management of PROM.

Keywords: Premature Rupture of Membrane (PROM); Respiratory Distress Syndrome (RDS); Infection; Chorioamnionitis.

Introduction

The normal development, structural integrity and functions of the foetal membranes are essential for the normal progress and outcome of pregnancy.

Indeed in most pregnancies labour begins at term in the presence of intact foetal membranes. Without interventions their spontaneous rupture usually occurs near the end of the first stage of labour. The onset of labour following PROM is directly related to gestational age at the time of rupture: after 36 weeks more than 80% of patients will be in labour within 24 hours; before 28 weeks only 48% will be in labour within 3 days of rupture [1].

- For the normal progress and outcome of pregnancy following factors are essential-
 - The normal development
 - Structural integrity
 - Function of the fetal membranes
- One of the most important functions of the membrane is :

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- To remain intact until the onset of labor at term.
- To maintain the protective intrauterine fluid environment.
- The amniotic fluid upon which fetus depends for its survival in utero.
- In most pregnancies labor begins at term in the presence of intact fetal membranes.
- Without intervention their spontaneous rupture usually occurs near the end of the 1st stage of labor. Premature rupture of membranes (PROM) is defined as the spontaneous rupture of amniotic membrane with a release of amniotic fluid at least one hour before the onset of labour. If the membranes rupture after 37 weeks of gestation it is called term PROM or prelabor rupture of membrane. If the rupture of membranes (ROM) occur after 28 weeks but before 37 weeks of gestation is termed as the preterm premature rupture of membrane (PPROM) [2].

Latent Period: It is the time interval between the rupture of membranes and the onset of uterine contractions.

Prolonged Prom: It is the term used when more than 24 hours have elapsed before the labour ensues.

High Rupture of Membranes: It is due to the rupture of amniochorion at a site distant from internal os and spontaneous cessation of leakage can occur [1].

PROM is usually followed by labour. The onset of labour after PROM is directly related to the gestational age at the time of rupture. It is an obstetric conundrum which is poorly defined, with an obscure aetiology, difficult to diagnose and is associated with significant maternal and neonatal morbidity and mortality and has diverse and controversial management strategies.

The maternal and fetal outcome in PROM is very important to decrease maternal and perinatal mortality and for better management and prevention of complications. Thus, this study aims to determine maternal and perinatal outcomes in PROM among term pregnant women who were admitted to the maternity or labor ward [3]. It increases the risk of prematurity and leads to other perinatal and neonatal complications with 1-2% risk of foetal death. PROM is associated with increased risk of chorioamnionitis, dysfunctional labour, increased caesarean rates, postpartum haemorrhage and endometritis in the mother. Thus, earlier the gestational age at the time of PROM, longer is the latency and more the complications. Management of PROM remains controversial and challenging. Controversy surrounds the role of tocolytics, steroids and antibiotics [4].

Aims and Objectives

Aim

To study maternal and perinatal outcome in term premature rupture of membranes.

Objectives

1. To study the outcome of labour in term premature rupture of membranes.
2. To find out the maternal and perinatal morbidity and mortality in term premature rupture of membranes.

Material and Methods

Source of Data

100 patients of term premature rupture of membranes in between 37-40 weeks gestation admitted in our institute studied after considering inclusion and exclusion criteria.

Study Design: Hospital based prospective observational study

Study Period: Over a period of one year from July 2015 to June 2016

Study Place: Tertiary care hospital

Sample Size: 100 patients

Inclusion Criteria

All pregnant women with a singleton pregnancy between 37-40 weeks of gestational age with premature rupture of membranes at term.

Exclusion Criteria

1. Multiple pregnancies
2. Intrauterine growth restriction
3. Uterine anomalies
4. Foetal anomalies
5. Myoma uteri
6. Hypertensive disorders and pregnancy induced hypertension
7. Gestational diabetes mellitus
8. Antepartum haemorrhage
9. Chronic renal failure
10. Class II to IV cardiac diseases.

Method of Collection of Data

A detailed history was taken including age of the patient, Antenatal booking case or unbooked case, socio-economic status of the patients, time of onset of draining, amount of fluid lost, its colour, odour, association with pain or bleeding per vagina and perception of foetal movements.

General examination was done. Height and weight were noted.

Systemic examination included cardiovascular, respiratory systems and CNS systems.

A speculum examination was done to confirm the diagnosis and to rule out cord prolapse. Confirmation of diagnosis done with either litmus paper or fern test.

Investigations like total count, differential count and C-reactive protein were done. Prophylactic antibiotic in the form of injection ampicillin 1gm IV every 6 hourly was given.

Depending upon the gestation age and Bishop's score labour was induced with misoprostol or augmented with oxytocin. Time of induction was

noted. Progress of labour was monitored, Induction to delivery interval and PROM to delivery interval were noted. Maternal pulse, blood pressure, foetal heart rate and its variations were checked frequently.

The onset of any complications like foetal distress, foetal heart rate variations, chorioamnionitis (clinical) were looked for. Progress of labour was monitored. If there was any evidence of foetal jeopardy or any other obstetrical complications, labour was cut short by instrumental delivery or caesarean section as required.

Observation and Result

In this study PROM was present in 80 cases in the age group 20-29 years. This is comparable with the study conducted by Shweta et al [5]. Some patient i.e 15% were >30 years of age and very few i.e 5% were <20 years.

In this study patients of low socio-economic status were 60% and middle socio-economic status were 30% which is comparable with Swathi Panday [4] which is 61% and 39% respectively and also comparable with Shweta et al [5] which is 30% and 58% respectively.

Table 1: Analysis of PROM cases according to maternal age

Age in years	No of cases	Percentage
<20	5	5
20-29	80	80
>30	15	15
Total	100	100%

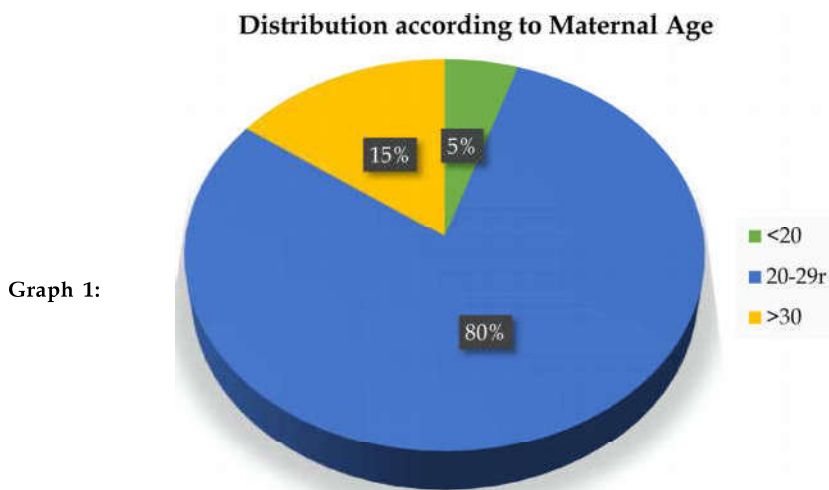


Table 2: Analysis of PROM according to socioeconomic status

Socio-economic status	No of cases	Percentage
Upper	10	10%
Middle	30	30%
Lower	60	60%
Total	100	100%

Graph 2:

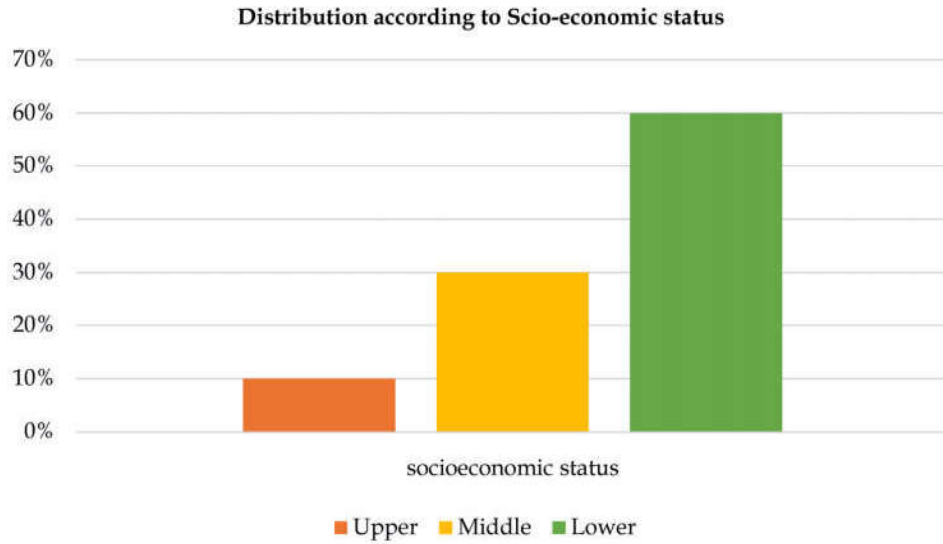


Table 3: Analysis of PROM according to booked and un-booked cases.

	No of cases	Percentage
Booked	27	27%
Unbooked	73	73%
Total	100	100%

Table 4: Analysis of PROM according to obstetric score (parity)

	No of cases	Percentage
Primigravida	39	39%
Multigravida	61	61%
Total	100	100%

Table 5: Distribution of patients according to Mode of Delivery

Mode of Delivery	No of cases	Percentage
Vaginal Delivery	74	74%
LSCS	26	26%
Total	100	100%

Graph 3:

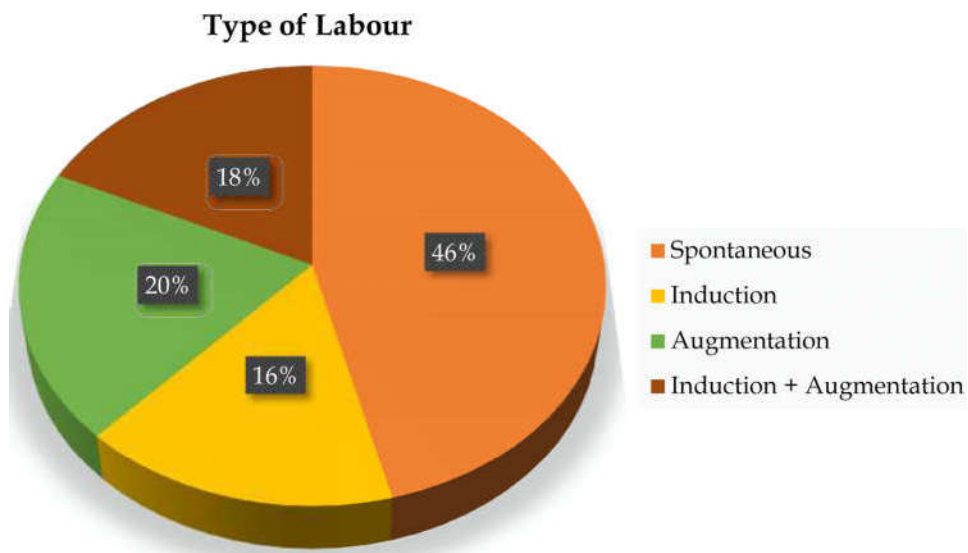


Table 6: Analysis of PROM according to Type of Labour

Type of Labour	No of cases	Percentage
Spontaneous Labour	34	46%
Induction of Labour	12	16%
Augmentation of Labour	15	20%
Induction & Augmentation	13	18%
Total	74	100%

Table 7: Analysis of PROM according to induction to delivery interval

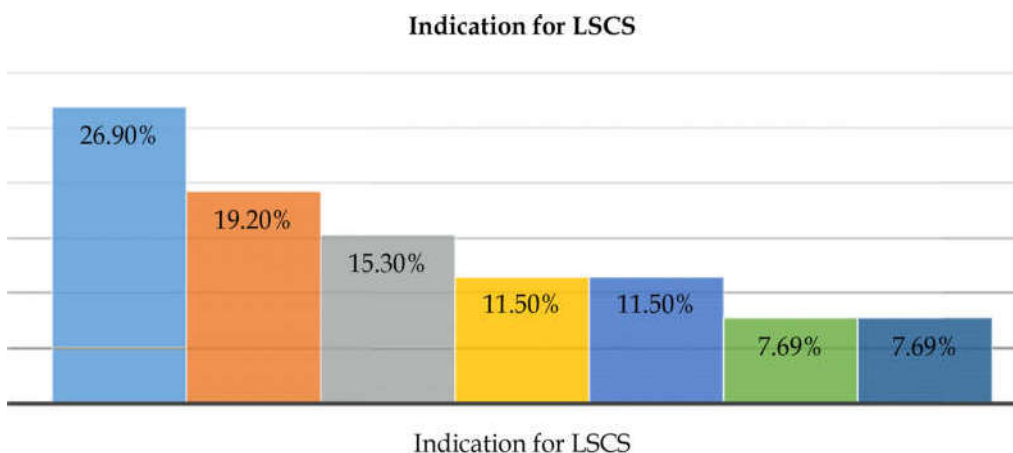
Induction to delivery interval	No of cases	Percentage
<12 hours	29	72%
13-24hours	8	20%
25-48hours	2	5%
>48hours	1	3%
Total	40	100%

Table 8: Analysis of cases according to PROM to delivery interval

PROM to Delivery Interval (Hrs)	No of cases	Percentage
<12	55	55%
13-24	42	42%
25-36	2	2%
>36	1	1%
Total	100	100%

Table 9: Analysis of PROM according to indicators for LSCS

Indications	No of cases	Percentage
Fetal distress	7	26.9%
Oligohydramnios	5	19.2%
Previous LSCS	4	15.3%
Transverse lie	3	11.5%
Breech	3	11.5%
Ocipito-posterior	2	7.69%
Failure of induction	2	7.69%
TOTAL	26	100%



Graph 4:

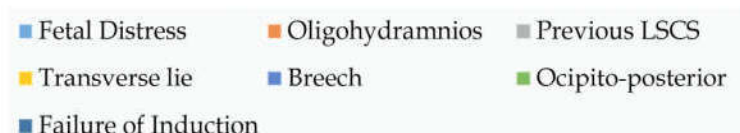


Table 9.1: Analysis of PROM according to maternal complications

Maternal complication	No of patient=7
Wound infection	3
Puerperal pyrexia	2
Urinary tract infection	1
Chorioamnionitis	1

Table 10: Analysis of PROM according to perinatal morbidity

Perinatal Complication	No of Cases
RDS	2
Septicaemia	2
Jaundice	8
NEC	1
Birth asphyxia	2
IVH	1
Total	16

In this study booked cases were 73% and unbooked cases were 27% which is comparable with Bhupesh H. Gaikward [6] which is 24% and 76% respectively.

In unbooked cases there is lack of antenatal care leading to lack of identification of recurrent risk factor like, PPRM, Preterm delivery and urogenital infection. In this studymultipara were 61% and primipara were 39% which is comparable to the study of Bhupesh H. Gaikwaed [6] which is 63% and 37% respectively. Multiparity is risk factor for PROM due to long standing infection, previous trauma to cervix and patulous os.

In this study spontaneous labour were 46% and induction of labour were 16%, augmentation of labour in 20%. Whereas induction & augmentation required in 18% of patients, which is comparable with Shweta et al [5] which is 45%, 13% and 28%, 14% respectively.

- In this study induction and augmentation done in 40 cases of which 72% of cases delivered within 12hrs, 20% delivered in 24hrs, 8% delivered after 24hrs.
- Induction has several benefits including shorter time of delivery, shorter maternal hospital stay, less chorioamnionitis.
- In this study, delivery interval less than 12hours was in 55% cases.
- Whereas delivery interval more than 36 hours was found in 1% cases.
- In this study LSCS was done in 26% cases.
- Main indication was fetal distress.
- Other indications were previous Lscs, transverse lie, breech presentation, occipito-posterior and failure of induction.
- In this study 7 patients had maternal complication like wound infection, puerperal pyrexia, UTI and chorioamnionitis. Which is comparable with

Shweta et al [5] with pyrexia in 12% and wound infection in 1% cases.

➤ Criteria for clinical diagnosis of chorioamnionitis:-

- Maternal pyrexia
- Maternal tachycardia
- Foul smelling discharge
- Uterine tenderness
- Fetal tachycardia

In this study, perinatal mortality was in 16% cases where maximum cases were jaundice in 8% cases and septicaemia in 2% cases. Whereas respiratory distress syndrome and NEC was 2% and 1% respectively. Also birth asphyxia and intraventricular haemorrhage 2% and 1% respectively.

Discussion

Premature rupture of membrane is a fairly common complication of pregnancy and can lead to increased maternal complications, operative procedures, neonatal morbidity and mortality. PROM is a significant obstetrics problem careful antenatal monitoring, detection and prompt treatment of genital infection is necessary.

Age

In this study out of 100 patients PROM was present in 80 cases in the age group 20-29 years. This is comparable with the study conducted by Shweta et al [5] some patient i.e 15% were >30 years of age and very few i.e 5% were <20 years.

Socioeconomic Status

In this study patients of low socioeconomic status were 60% and middle socioeconomic status were 30%

which is comparable with swathi panday [4] which is 61% and 39% respectively and also comparable with Shweta et al [5] which is 30% and 58% respectively.

Booked and Unbooked Cases

In this study booked cases were 73% and unbooked cases were 27%. On contrary, study conducted by Bhupesh H. Gaikward [6] shows booked cases of 24% and unbooked cases of 76%.

Parity

In this study multipara were 61% and primipara were 39% which is comparable to the study of Bhupesh H. Gaikwaed [6] which is 63% and 37% respectively.

Multiparity is risk factor for PPROM due to long standing infection, previous trauma to cervix and patulous os.

Studies	Present study	Swathi ⁴	Anjana ⁷	Kadikar ⁸
Maternal morbidity	7%	9%	21%	8%

In this study 7 patients had maternal complication like wound infection, puerperal pyrexia, UTI and chorioamnionitis. Which is comparable with Shweta et al pyrexia in 12% and wound infection in 1% cases. Also comparable with other study like in swathi panday 16% cases, in Anjana devi 21% cases and in kadikar 8% cases.

Studies	Present study	Kamlajayaram ⁹	Sneha noor ¹⁰	Kadirkar ⁸
Perinatal morbidity	16%	24%	28.23%	61%

Resent measures like CRP, band neutrophil count and therapeutic use of specific human gamma globulin against vaginal flora as well as preventive measure like abstinence will definitely help to reduce the morbidity and mortality.

Conclusion

Foetal membrane serve as protective barrier against ascending infection. Spontaneous rupture of membranes is normal during labour, however, premature rupture of membranes before onset of labour especially if remote from term is a serious problem. PROM is a high risk obstetric condition

Type of Labor

In this study spontaneous labour were 46% and induction of labour were 16%, augmentation of labour in 20%. Where induction & augmentation in 18% of patients. Which is comparable with Shweta et al [5] which is 45%, 13% and 28%, 14% respectively.

Indication of LSCS

In present study, LSCS done in 26% of patients which is comparable to the study conducted by bhupesh h gaikwad [6] which is 30%.

Maternal Complication

In this study 7 patients had maternal complication like wound infection, puerperal pyrexia, UTI and chorioamnionitis. Which is comparable with Shweta et al [5] pyrexia in 12% and wound infection in 1% cases.

Perinatal Morbidity

The main cause of perinatal morbidity was RDS in 2% cases followed by septicaemia 2% & jaundice 8%. NEC in 1% cases birth asphyxia and intaventricular haemorrhage 2% and 1% respectively.

As the duration of PROM increases perinatal morbidity & mortality also increases.

which is a common problem among pregnant women and a big challenge to the neonatologists. Looking after a premature infant puts immense burden on the family, economy and health care resources of the country. Therefore management of PROM requires accurate diagnosis and evaluation of risks of PROM and timely diagnosis is essential to reduce maternal and perinatal morbidity and mortality. Antibiotic administration to women with PROM significantly reduces maternal and neonatal morbidity. Active management is needed to enable delivery within 24 hrs of PROM and it offers better maternal and neonatal outcome. The main objective of the obstetrician should be early screening, adequate antenatal visits and improvement of general

condition of the mother, identifying risk factors, treating associated complications, correct diagnosis of rupture of membranes and induction of delivery that gives a high rate of successful vaginal deliveries without a rise in neonatal and maternal infections. A healthy neonate as well as a healthy satisfied mother are natural aims for the obstetrician.

Strict aseptic precaution, appropriate therapy, identification of risk factors like cervico-vaginal infection & their management & regular antenatal follow-up are important factor in the prevention & management of PROM.

Recent measures like CRP, band neutrophil count & therapeutic use of specific human gamma globulin against vaginal flora will definitely help to reduce the morbidity & mortality in PROM.

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