



A STUDY ON MATERNAL AND PERINATAL OUTCOME IN PREMATURE RUPTURE OF MEMBRANES AT TERM.

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ABSTRACT

Introduction : Premature of membranes is defined as rupture of foetal membranes before the onset of labour. PROM can cause maternal complications like chorio-amnionitis, increased operative procedures, puerperal sepsis and neonatal morbidity and mortality in term PROM. **Methods:** 100 cases of spontaneous rupture of membrane with gestational age > 37 weeks with confirmed PROM by a speculum examination were selected. A detailed history was taken and gestational age confirmed. General, systemic and obstetrical examination were done. Parameters of maternal and foetal wellbeing were recorded. All study groups received prophylactic antibiotics. Single pelvic examination done, and maternal vitals recorded four hourly. **Results:** PROM was common in age group 20-24 years (35%) and common in primigravida. Majority of women were admitted within 6 hrs of PROM and the mean duration of induction to delivery was 12.9-hrs. And the mean duration between PROM to delivery was of 20.2 hours. Perinatal mortality was 1.5 %. Perinatal morbidity was seen in 26%. E. coli was common organism found in cervical swab culture. **Conclusion:** In present study, majority was primigravida and the most common age group was 20-24 years, belonging to low socio-economic status. Maternal morbidity and neonatal morbidity was associated with increased duration of PROM to delivery and infection of female genital tracts with pathogens. Hence an appropriate and accurate diagnosis of PROM is essential for favourable outcome in pregnancy.

KEYWORDS : Maternal and Perinatal Outcome, Premature Rupture of Membranes

INTRODUCTION

Premature rupture of membranes (PROM) referred to the disruption of foetal membranes before the beginning of labour, resulting in spontaneous leakage of amniotic fluid. PROM that occurs prior to 37 weeks of gestation is termed preterm PROM. PROM that occurs after 37 weeks of pregnancy is called term PROM. Most of studies indicate the incidence of premature rupture of membranes around 5-10%.

Cases of PROM are prone to cord compression, cord prolapse and are associated with high risk of ascending infection. Lengthier the time interval between ruptured membranes and onset of labour more the risk of ascending infection and occurring chorioamnionitis. PROM is associated with increased risk of chorioamnionitis, unfavourable cervix and dysfunctional labour, increased caesarean rates, PIH and endometritis in the mother. In case of PROM neonatal outcome include respiratory distress syndrome, hypothermia, hypoglycaemia, intraventricular haemorrhage, bronchopulmonary dysplasia etc. PROM is associated with 20% of neonatal death. Women with intraventricular infection deliver earlier than noninfected women and infants born with sepsis have a mortality, morbidity rate higher than those without sepsis. Diagnosis and proper management is very important to limit various foetal and maternal complications generally due to infections.

Hence the present study was conducted to analyse the maternal and perinatal outcome in premature rupture of membranes. In some of the Indian studies, the incidence of PROM is reported as 7-12% in all labours.^{4,5} Cases of PROM are prone to cord compression/ cord prolapse and are associated with high risk of ascending infection. Lengthier the time interval between rupture of membranes and onset of labour more the risk of ascending infection and acquiring chorioamnionitis.⁶ PROM is associated with increased risk of chorioamnionitis, unfavorable cervix and dysfunctional labour, increased caesarean rates, postpartum hemorrhage and endometritis in the mother.

Most of the studies mentioned possible neonatal outcomes in cases of PROM may include respiratory distress syndrome, hypothermia, hypoglycemia, intraventricular hemorrhage, broncho pulmonary dysplasia etc. PROM is associated with 20% of neonatal deaths. Hence PROM is an obstetric condition which is poorly defined with an obscure etiology and associated with significant maternal morbidity and mortality.⁷ Hence the present study was conducted to analyze the maternal and perinatal outcomes in premature rupture of membranes at term.

MATERIAL AND METHODS:

A prospective cross sectional study was conducted at SKMCH Muzaffarpur for a period of one year by the department of Obstetrics and Gynaecology from February 2019 to January 2020. All the patients attending the Outpatient Department and Emergency were enrolled as cases in the study. Cases were selected by random sampling techniques.

INCLUSION CRITERIA:

- Gestation age > 37 weeks confirmed by clinical examination, dates and USG examination
- Confirmation of PROM by direct visualisation or Fern test
- Cervical dilatation < 3cm
- Single live pregnancy with vertex presentation
- Lack of uterine contraction for at least one hour from PROM

EXCLUSION CRITERIA:-

- Cases with >37 weeks of gestation, previous history of LSCS, complications like contracted pelvis, CPD, multiple pregnancy.

A detailed menstrual and obstetric history of the case was noted. Detailed clinical obstetric examination was done and history of the sign and symptoms were noted which include time of onset of draining, amount of fluid losses, its colour, odour, association with pain or bleeding per vagina and perception of foetal movement. General and systemic examination as per the protocol.

A sterile speculum examination was done and condition of vagina and cervix was noted. Cervical swab was taken and sent for Gram's stain, culture and sensitivity. Liquor was collected and subjected for Litmus paper test and Fern test. Bishop's score was noted by pelvic examination and based on the score labour was induced with prostaglandins and time of induction was noted. Induction to delivery interval and PROM to delivery interval was noted.

Immediately after delivery APGAR score of the newborn was noted at 1 and 5 minutes interval. Neonatal morbidity and mortality was noted. Maternal complications any were watched during the puerperal period and followed until discharge from the hospital.

RESULTS:

The present study was conducted on 100 cases of PROM who attended the Department of Obs and Gynae and emergency of SKMCH, a tertiary care hospital in Bihar. All the cases which included in the study were fulfilling the inclusion criteria.

Table 1: Demographic character of cases in the study

Age wise distribution of cases	Number	Percentage
15-19 years	18	18
20-24 years	35	35
25-29 years	22	22
30-34 years	14	14
>35 years	11	11
Antenatal cases		
Unbooked cases	38	38
Booked cases	62	62
Gravida		
Primi	58	58
Multi	42	42
Socioeconomic status		
Low	64	64
Middle	36	36

The age group range in the study was 15 years to >35 years. Most common age group in the study was 20-24 years (35%). Maximum age in the study was 40 years and minimum was 18 years. The mean age was 22.6 years. 58% were of primigravida and 64% cases were of low socio-economic status.

Table 2: Time Related Changes In Cases Of The Study

Induction to delivery interval	Number	Percentage
0-6	8	8
6-12	35	35
12-24	54	54
24-48	3	3
PROM to delivery interval		
0-6	1	1
6-12	7	7
12-24	65	65
24-48	25	25
>48	2	2

Maximum number of cases delivered within 12-24 hours was 65% in both Primi and Multigravida. The mean interval between PROM to delivery was 20.2 hrs. Maximum number of cases delivered within 12-24 hours (induction to delivery interval) was 54% in both Primi and Multigravida. Mean duration of induction to delivery interval was 12.9 hours.

Table 3: Outcome Of Labour In Primi And Multigravida

Gravida	Vaginal delivery		Forceps delivery		LSCS	
	No	%	No	%	No	%
Primi	30	30	3	3	14	14
Multi	40	40	2	2	11	11

In the present study it was observed that 70% of cases had normal vaginal delivery. 5% of cases had instrumental delivery and 25% of cases had LSCS. Vaginal delivery was more in multigravida (40%) and LSCS was more in primigravida (14%). Failure to progress was the most common indication for LSCS observed in both primi and multigravida followed by foetal distress and intrapartum sepsis was the least common indication.

TABLE 4:

Maternal morbidity	Number	Percentage
Febrile morbidity	8	8
Wound infection	2	2
LRTI	2	2
UTI	1	1
PPH	1	1
MRP	1	1
Puerperal Sepsis	1	
Perinatal Morbidity		
Birth asphyxia	14	14
Septicemia	4	4
Umbilical cord sepsis	2	2
Conjunctivitis	1	1
LRTI	1	1
Convulsions	3	3
Meconium aspiration syndrome	1	1

The rate of maternal morbidity was 17%, febrile morbidity accounting to maximum with 8%, followed by wound infection (2%) and others were LRTI, UTI, PPH, MRP, Puerperal sepsis. No o conclude in the present study, majority was primigravidas and the most maternal mortality was recorded in the present study. The rate of perinatal mortality was 26% with birth asphyxia contributing the maximum cases with 14%. Perinatal mortality was 3% with birth asphyxia being the major cause in 5 cases and, 1 with septicemia.

In the present study it was observed that longer the PROM to delivery interval higher the risk of maternal and foetal morbidity.

51% of women has positive cervical swab culture, 49% of cases had no bacterial growth. Predominant isolate from the cervical swab was E. Coli followed in order Staph. Aureus, Klebsiella pneumonia, coagulase negative Staphylococcus, group B Streptococcus in the study.

DISCUSSION

Premature rupture of membrane is a common complications of pregnancy which leads to increased maternal complications, operative procedures, maternal mortality and morbidity. In the present study the commonest age group was 20-24 years (35%) which correlates with the finding in the study of Kodkany BS et al and Devi A et al. The occurrence of PROM is more in unbooked cases than booked cases. The incidence of PROM was high in cases of low socio-economic status in present study (64%) which can be explained that poor nutritional status leads to decreased antibacterial activity and increased defects in the foetal membrane. Other associated factors which could increase the risk include malnutrition, anaemia and increased genitourinary infections due to poor personal hygiene. Similar findings were reported by many studies in India and abroad. In the present study increased cases of PROM were observed in cases of primigravidas than multigravidas which contrary to many of the studies, multiparity is a risk factor for PROM due to long standing infections, traumatocervix and patulous os. It was observed in our study that as the duration of PROM to delivery increases there is an increased risk of development of maternal and neonatal morbidity which is similar to the findings of Thakur U et al in there study. In present study the rate of LSCS was 27% which is similar to finding of Swathi Pandey et al. In the present study maternal morbidity was observed in 17% cases which is similar to findings in the study of Al-Qa et al and Antolic ZN et al. In our study the incidence of perinatal morbidity was 26% and mortality was 3% which is similar to the findings of Noor S et al. The major cause of perinatal mortality was birth asphyxia followed by sepsis in newborn which is common in many of the studies universally. Foetal morbidity always increases with increase in PROM to delivery interval. In present study, 51% cervical swab culture revealed growth of the isolate which indicates pre-existing infection/ colonisation of the genital tract with the pathogens. Infection of the genital tract is a high risk factor for development of PROM associated with an adverse outcome depending upon the nature and type of pathogen. Neonatal morbidity is always associated with infection of group B Streptococcal infection of genital tract. In current study, E. Coli was the predominant isolate and associated with neonatal morbidity in both primi and multigravidas. The occurrence of PROM is more in unbooked cases than booked cases and the risk was statistically significant which is similar to findings in many studies all over the world.10 The incidence of PROM was high in cases of low socioeconomic status in present study (64%) which can be explained that poor nutritional status leads to decreased antibacterial activity and increased defects in the foetal membrane. Other associated factors which could increase the risk include malnutrition, anemia, and increased genitourinary infections due to poor personal hygiene. Similar findings were reported by many studies in India and abroad.11 In the present study increased cases of PROM were observed in cases of primigravidas than multigravidas which is contrary to many of the studies, multiparity is a risk factor for PROM due to long standing infection, trauma to cervix and patulous os. The mean duration between PROM to delivery interval in the present study was 20.2 hours, it was observed in our study that as the duration of PROM to delivery increases there is an increased risk of development of maternal and neonatal morbidity which is similar to the findings of Thakur U et al in their study.12 The percentage of cases with Bishop score in range of 5-6 was higher in multigravidas than primigravidas and in range of 3-4 was higher in primigravidas than multigravidas in our study which is similar to findings of Zaghoul et al.13 Most of the studies indicate higher the Bishop score there is an increase in the chances of normal delivery in both primi and multigravidas. In the present study, the rate of LSCS was 27.5% which is similar to findings of Swathi pandey et al and contrary to findings of Ray P et al and Jayaram VK et al who reported an incidence of 31.5% of LSCS in their studies.14-16 In the present study, maternal morbidity was observed in 33 cases (16.5%) which is similar to findings in the study of Al-Qa et al and Antolic ZN et al.17 Febrile morbidity was the commonest morbidity in our study and no cases of maternal mortality was observed in our study. However, in study of Tahir S et al the most common morbidity observed was chorioamnionitis which lead to the development of septicemia.18 There is always an association of perinatal morbidity and mortality with PROM, in our study the incidence of perinatal morbidity was 26% and mortality was 3% which is similar to findings of Noor S et al and contrary to findings of Kifah Al et al who reported higher rates of morbidity and mortality in his study.19,20 The major cause of perinatal mortality was birth asphyxia followed by sepsis in newborn which is common in many of the studies universally. Foetal morbidity always increases with increase in the PROM to delivery interval. In the present study, 51% of cervical swab

culture revealed growth of the isolate which indicates preexisting infection/ colonization of the genital tract with the pathogens. Infection of the genital tract is a high risk factor for development of PROM associated with an adverse outcome depending upon the nature and type of pathogen. Neonatal morbidity is always associated with infection of Group B streptococcal infection of the genital tract. In current study, *Escherichia coli* was the

CONCLUSION

Common age group was 20-24 years belonging to low socioeconomic status. Maternal morbidity and neonatal morbidity was associated with increased duration of PROM to delivery and infection of the female genital tract with pathogens. Hence an appropriate and accurate diagnosis of PROM is essential for favourable outcome in pregnancy.

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