Study of Maternal and Fetal Outcome Following Term Prelabour Rupture of Membrane in a Peri Urban Tertiary Care Centre

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Abstract

Background: Prelabour rupture of membrane at term accounts for 2-10% incidence. It is associated with significant maternal and fetal complications if not timely managed. Early complications include cord prolapse, cord compression and placental abruption and delayed complications include chorioamnionitis, maternal and fetal sepsis. The present study was undertaken to study the labour outcome following active management of term prelabour rupture of membrane and associated maternal and fetal outcome.

Method: Cases of spontaneous rupture of membranes with singleton pregnancy 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 obstetric examinations were done. Non stress tests and blood investigations were sent to rule out sepsis. All patients received prophylactic antibiotics. After taking consent, induction of labour was done with oral misoprostol and maternal vitals were recorded four hourly and fetal heart rate was recorded for variability. Induction to delivery interval was recorded and maternal and fetal outcome following PROM was noted.

Results: PROM was more common in primigravida. Majority of women were admitted within 12 hours of PROM (87.83%). Recurrent episodes of urinary tract infection was found a significant cause for PROM (33.78%). Patient delivered vaginally with 55.40%. Post delivery complications included post partum sepsis in 12.16%. No maternal mortality was noted. Neonatal sepsis was seen in 6 babies (8.10%).

Conclusion: PROM is associated with many maternal and fetal complications which can be reduced by educating the women to have regular antenatal check up and early recognition of urinary and genital tract infection, and treat appropriately and to report at the earliest in case of rupture of membrane for timely management to reduce maternal and fetal morbidities and mortalities.

Keywords: *PROM, chorioamnionitis; Caesarean section; maternal morbidity; fetal morbidity; mortality.*

Introduction

Premature rupture of membranes (PROM) at term refers to a patient who is beyond 37 weeks' gestation and has presented with rupture of membranes (ROM) prior to the onset of labor that is active uterine contactions.[1] Spontaneous rupture of membranes (ROM) is a normal component of labour and delivery[2], but the pre-labour rupture of membranes (PROM) is not. Preterm premature rupture of membranes (PPROM) is ROM prior to 37 weeks' gestation. Spontaneous preterm rupture of the membranes (SPROM) is ROM after or with the onset of labor occurring prior to 37 weeks[3,4,5]. Prolonged ROM is any ROM that persists for more than 24 hours

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and prior to the onset of labor.[1] Term PROM occurs in 5-20% of all labours. Indian studies (Swati Pandey and Bandi S. 2000) [6] reported an incidence of PROM in 7-12% of all labours. These patients are more prone to cord compression, cord prolapse, placental abruption and higher risk of chorioamnionitis. The longer the time interval between rupture of membranes and onset of labour, the greater the risk of ascending infection and chorioamnionitis.[7,8]. PROM is associated with increased risk of dysfunctional labour, increased cesarean rates, postpartum haemorrhage and endomyometritis in the mother. In the fetus, there is increased occurrence of hyaline membrane disease, intraventricular haemorrhage, sepsis, cerebral palsy, fetal distress and mortality.[9,10.] Management of PROM has always been controversial regarding conservative management and waiting for spontaneous onset of labour which has more chances of ascending infection with maternal and fetal morbidity, or active induction of labour which causes more failure of induction with higher cesarean rates. The role of tocolytics, antibiotics and steroids has also been controversial in cases of preterm PROM. Almost 80% of patients close to term with PROM begin labour within 24 hours and 95% deliver within 72 hrs. Urinary tract or vaginal Infection, Cervical incompetence, Trauma, uterine anamolies, Antepartum haemorrhage, polyhydramnios, Multiple gestation and coitus in pregnancy, contribute to PROM.[9,10]. It is often not possible to pinpoint the exact cause in an individual case. For women with previous pregnancy history of preterm birth early detection and treatment of the cause can reduce the chances of preterm PROM in this pregnancy. [11] Jiwane (1991) observed that the incidence of PROM increased 4.4 fold in women undergoing routine pelvic examination in the third trimester of pregnancy. Kodkany and Telang (1991) [12] observed that coitus in the last trimester led to a six-fold increase in PROM. Cases needs to be individualized and all parameters should be considered while dealing with term PROM. All cases needs to be individualized considering maternal and fetal parameters so as to avoid maternal and fetal morbidity and mortality while dealing with term PROM. This study was also intended to decrease the complications associated with term PROM by actively managing labour induction and timely intervention and observing the maternal and fetal outcomes and complications associated with it.

Material and Method

The study was a cross sectional study. The study was conducted at Datta Meghe Medical College and Shalinitai Meghe Hospital and Research Centre, Wanadongri, Hingna, Nagpur during a period of 6 months from January 2020 to June 2020 where the patients who presented with term PROM and who fullfilled the criterias were included in the group and analysis of labour outcome in 74 cases with premature rupture of membranes after 37 completed weeks were done.

Inclusion Criteria:

1. Gestational age of >37 weeks confirmed by dates, clinical examination or ultrasound.
2. Primigravida and multipara
3. Pervious cesarean section patients and malpresentations.
4. Cervical dilatation of <3 cms.
5. Lack of uterine contractions for atleast 1 hour from PROM.
6. Single live pregnancy in vertex presentation.
7. PROM confirmed by Direct visualization

Exclusion Criteria:

1. Gestational age <37 weeks
2. Cervical dilatation of >3 cms.
3. Women in labour or with uterine contractions within 1 hour of rupture of membrane.
4. Multifetal gestation.
5. Women not giving consent.

Depending upon the Bishop's score, labour was induced with prostaglandin (misoprostol oral) or accelerated with oxytocin. The labour of each case was closely monitored and assessment of progression was monitored 4 hourly. Induction to delivery interval and PROM to delivery interval were noted. Maternal pulse, blood pressure, fetal heart rate and its variations were checked frequently. The onset of any complications like fetal distress, fetal heart rate variations, chorioamnionitis (clinical) were looked for. Progress of labour was monitored. If case of non reassuring NST, fetal distress or any other obstetrical complications, labour was cut short by instrumental delivery or cesarean section as required. Patients of previous lower segment cesarean section or malpresentation were directly taken for LSCS after proper investigations and consent.

Observations: Total patients who full-filled the inclusion criteria were 74: The majority presentation of PROM observed were of age group 26- 30 (39.43%), followed by 21-25 yrs (32.43%). Most of the patients in the study were unemployed doing house hold moderate activities accounting to 75.67% which was significant. Presentation of PROM was more in primigravida (56.75%) as compared to multigravida (43.24%). Majority of the patients were primigravida (56.75%) with no prior abortions, followed by previous 2 abortions in 16 cases (21.62%) and previous 1 abortion (17.56%). Majority of the patients presented within 12 hrs of PROM i.e 87.83%, in which 46 patients presented within 6 hours and 19 between 6-12 hours. Remaining 9 patients presented after 12 hours.

Table no.1: Probable causes of PROM.

Causes of PROM	N=74	%
Previous PROM	11	14.86%
Recurrent UTI	25	33.78%
Vaginitis	13	17.56%
Cervical incompetence	04	5.40%
Polyhydramnios	08	10.81%
Unknown	13	17.56%

Table no. 1 showed: The causes of PROM are endless but looking into the cases 33.78% cases presented in opd previously with recurrent history of urinary tract infection as per culture report and were treated with antibiotics which was a significant cause followed by vaginal infection observed in 13 patients. Other causes included polyhydramnios (10.81%), cervical incompetence in 04 cases and patients who had previous pregnancy with PROM were 11. Patients in whom no cause was found were 13.

Table no. 2: Associted other complications

Comorbidities	N=74	%
Pregnancy induced hypertension	16	22.97%
Polyhydramnios	08	10.81%
Hypothyroidism	11	14.86%
Breech	03	4.05%
Oligohydramnios	05	6.75%
Previous 1 lscs	06	8.10%
Previous 2 lscs	03	4.05%
No complications	22	29.72%

Table no. 2 showed: Cases of PROM were screened for other causes which can indirectly be a cause for PROM. It was found that 16 patients had coincidental pregnancy induced hypertension (21.62%) which was found significant followed by polyhydramnios in 08 cases, oligohydramnios in 05 cases. Patients with previous 1 and 2 klscs and with breech presentation associated with PROM were taking directly for LSCS. Those patients with no other complications were 22 (29.72%).

Table no. 3: Mode of delivery

Mode of delivery	N=74	%
Full term vaginal deliveries	41	55.40%
Cesarean section	33	44.59%

Table no. 3 showed: Patients showed good result with oral prostaglandin and normal delivered patients were 41 (55.40%). Primigravida comprised of only 17 (22.97%) cases and multigravida were 24 (32.43%). Most of the primigravida went for lscs 25 (33.78%) cases, n multigravida undergoing lscs were 8 (10.81%).

Table no.4: Indications of lower segment cesarean section.

Indications	N=33	%
Failed induction	07	21.21%
Fetal distress	14	42.42%
Previous LSCS	09	27.27%
Breech	03	9.09%

Table no.4 showed: Indications of lscs included fetal distress in 42.42% patients following induction with misoprostol which was significant and second cause was failed induction in 21.21%. Patient not progressing into active labour for 12 hrs even after induction were considered failure of induction.

Table no. 5: Post operative maternal complications

Maternal complications	N=74	%
Post operative pyrexia	09	12.16%
Wound discharge	02	2.70%
Episiotomy gape	01	1.35%
Post partum haemorrhage	04	5.40%
Endomyometritis	00	0
Maternal mortality	00	0

Table no. 5 showed: Post operatively 9 mothers had pyrexia on day 2-3, fever profile were sent, where their white cell counts were raised, patients were managed conservatively and recovered uneventfully. LSCS woung gape was seen in 2 patients and episiotomy gape in 1 patient. Post partum haemorrhage was seen in 4 patients who were medically managed. No cases of endomyometritis and maternal mortality were noted.

Table no. 6: Neonatal complications

Neonatal complications	N=74	%
ICU Admission	21	28.37%
Hyperbilirubinaemia	13	17.56%
Low birth weight babies	22	29.72%
Respiratory distress	02	2.7%
Neonatal sepsis	06	8.10%
Neonatal deaths	00	0%

Table no 6 showed: Hyperbilirubinaemia were noted in 13 babies (17.56%), they were admitted for phototherapy in ICU and discharged without any complications, 2 babies had post delivery respiratory distress and were managed in ICU, later were discharged. Post delivery sepsis were noted in 6 babies who were managed with injectable antibiotics, all these babies of hyperbilirubinaemia, respiratory distress and sepsis were shifted to ICU. (21 babies). No cases of neonatal deaths were noted.

Discussion

Prelabour rupture of membranes is an important problem in obstetric requiring active management so as to avoid maternal and fetal complications. There are various tests to diagnose PROM such as fern test, ph test, nitrazine test along with ultrasonography to see for the amniotic fluid index. All these tests are of value in managing preterm PROM along with blood investigations,vaginal swab,urine culture and clinical symptoms and signs to look for chorioamnionitis. Conservative management in cases of preterm PROM includes steroids, tocolytics and antibiotics.

The etiology of PROM is multi-factorial and in some cases yet unclear. Infection is one of the exogenous etiologic factors thought preventable in some cases with proper antenatal screening and treating of genito-urinary infections. Management of pregnancies with pre-labour rupture of membranes varies depending on gestational age and obstetric status. Screening of high risk patients who has previous history of PROM, cervical incompetence, cervical surgeries, polyhydramnios, genitourinary infections should be done to avoid PROM.

In the study done by Anjana Devi[13] done at J.I.P.M.E.R, Pondicherry (1996), 76.9% of cases belonged to age group of 20-29 years. . In Piya Ray's[14] study done at R.G. Kar Medical College, Calcutta (1997), 62% belonged to the age group of 20-25 years and 20% to 26-30 years group. In another study done by B.S. Kodkany[12] at J.N. Medical College, Belgaum (1990), 46% of cases were in age group of 21-25 years. In the present study, the PROM was common in 26-30 yrs age group, (39.18%) followed by 32.43% between 21-25 yrs of age group.

In the study by Umed Thakor[15], 53.2% were primigravidas. In the study by Swati Pandey[6], 62% were primigravidas. In current study, 56.75% were primigravida which is comparable to other studies.

As the duration of PROM increases, problems in the mother and the baby also increases. In the study by Umed Thakor,[15] the duration from PROM to admission was 12.06±6.04 hours. In the study by Anjana Devi,[13] the duration of PROM ranged from 3 hours to 5 days, mean being 16 hours. In present study, 87.82% patients reported within 12 hours of PROM which is comparable with the study by Umed Thakor [15].

In the present study, 44.59% had cesarean section, being comparable to the study by Piya Ray[14]. Rate of cesarean section was higher in the studies by Anjana Devi [13] and Singhal[16] and lower in the studies by Jayaram VK[17] compared to the present study.

Maternal morbidity included pyrexia in 12.16% in the present study which was comparable to studies conducted by Anjana Devi (20.19%)[13] and Singhal (17.5%)[16]. PPH was seen in 5.40% which was higher as compared to that of studies by Anjana Devi (1.92%)[13] and Singhal (1.5%)[16].

In Anjana Devi's[13] study, perinatal mortality rate was 4.8%. In study by Sanyal[18] perinatal morbidity was 32% and mortality was 5%. In Piya Ray's[14] study it was 2.5%. Kodkany[12] perinatal morbidity was 39.8% among which birth asphyxia was responsible for 29.5%.

In the present study perinatal morbidity was 28.37% which is comparable with other studies and mortality rate was 0%.

Conclusion

Pregnancies complicated with term PROM should have early induction and supervised labor preferably in an institution. Management of each case has to be individualized. A combined effort of obstetrician and neonatologist is necessary. A good neonatal intensive care unit back up can be helpful in reducing the perinatal morbidity and mortality. Timely diagnosis of PROM by patient and early approach to hospital along with vigilant monitoring and acceleration of labour can help in significant reduction in the maternal and fetal morbidity and mortality.

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