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Original Research Article

Maternal and Perinatal Outcome in Preterm Premature Rupture of Membrane

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ABSTRACT

Background: Pre-labor rupture of membranes (PROM) is defined as the spontaneous rupture of amniotic membranes with a release of amniotic fluid after 28 weeks of pregnancy and before the onset of labor.
Aims and Objectives: To analyse the cases of preterm premature rupture of membrane in terms of maternal and perinatal outcome.
Materials and Methods: This prospective study was conducted over hundred singleton pregnancies with cephalic presentation with gestational age 32-36 weeks with preterm premature rupture of membrane (PPROM) admitted to labour room in Department of Obstetrics and Gynaecology, at Pt. B.D. Sharma PGIMS, Rohtak. Sample size:100.
Observations: Perinatal mortality observed in group A 4.87% cases and group B 5.08%.
Conclusion: PPROM is significant obstetric problem. It contributes to increased maternal morbidity as well as perinatal morbidity and mortality. Careful antenatal monitoring, detection and prompt treatment of infection is necessary. Strict aseptic precautions, appropriate therapy, and proper antenatal follow up are important factors in prevention and management of PPROM.

Keywords: Maternal, Perinatal, Outcome, Premature, Rupture.

INTRODUCTION

Pre-labor rupture of membranes (PROM) is defined as the spontaneous rupture of amniotic membranes with a release of amniotic fluid after 28 weeks of pregnancy and before the onset of labor (Pritchard et al 1985). [1] If the membranes rupture after 37 weeks of gestation it is called term PROM. If the rupture of membranes (ROM) occurs after 28 weeks but before 36 weeks of gestation is termed as the preterm premature rupture of membrane (PPROM) (Gibert and Harmon2003). [2] The interval between the rupture of membranes and the onset of uterine contraction is called latent period. Rupture of membranes >24 hr before the onset of labor prolonged PROM. [3]

The incidence of PPROM is variable. The incidence of PPROM is 2%-17% and is responsible for 1/3 of all preterm births (Mercer). [4] ROM occurs in 80% of term gestation and 20% of preterm gestation. [5] Following the rupture of membranes, both the mother and foetus have an increased risk of infection, which can be both systemic and local. [4]

Perinatal mortality due to PPROM is 11.3% in 28 to 32 weeks, 4.4% in 33 to 34 weeks. [5] When PROM occurs earlier from term there are significant risks of maternal and perinatal morbidity and mortality, therefore the attending

physicians play an important role in management of PPROM they need to develop pregnancy outcome plan, whereby a suitable decision is reached for decreasing maternal and fetal risks. PPROM is diagnosed by history, physical finding and simple laboratory tests. Although these tests are accurate in 95% of cases, each has false positive and false negative results, especially in patients with small amount of amniotic fluid in the vagina.

With this background the present work has been undertaken in this part of the state (Rohtak; Haryana), where people are socially and economically backward, with low literacy rate and utilisation of antenatal care facility, far from satisfaction. Most mothers come from rural areas, travelling a long distance for hospitalization, in which membranes have ruptured much before.

Aims and Objectives

To analyse the cases of preterm premature rupture of membrane in terms of maternal and perinatal outcome.

MATERIALS AND METHODS

This prospective study was conducted over hundred singleton pregnancies with cephalic presentation with gestational age 32-36 weeks with preterm premature rupture of membrane (PPROM) admitted to labour room in Department of Obstetrics and Gynaecology, at Pt. B.D. Sharma PGIMS, Rohtak. The women of previous LSCS, with suspected chorioamnionitis at admission, malpresentation, gross congenital malformation and women in labor will be excluded from the study. All women with PPROM were admitted after taking an informed consent. Detailed history including name, age, husband's name, address, literacy level, occupation, obstetric and menstrual history was taken. Date of last menstrual period was noted and period of gestation was estimated accordingly. General physical examination including weight, height, pulse rate, blood pressure, temperature, pallor, icterus, cyanosis, clubbing, pedal edema, jugular venous pressure will be noted. Per abdomen examination including uterine height, presentation, fetal heart sound, amount of liquor was noted clinically. Per speculum examination for condition of cervix and colour and odour of liquor was done. Temperature and pulse rate was charted four hourly. Following investigations was done at the time of admission- total leukocyte count (TLC), differential leukocyte count(DLC), C–reactive protein(CRP), high vaginal swab (HVS), urine complete(C/E). A sonography was performed in all the women during the first 12-24 hours of admission for foetal biometry and amniotic fluid index (AFI). According to AFI, women were categorized into two groups. Group A included women with AFI ≤5 and group B with AFI >5. Injectable antibiotics (injection Ampicillin 1 gram intravenously stat after sensitivity testing followed by500mg every 6 hours) and steroid cover (injection betamethasone 12mg intramuscular stat followed by 12mg after 24 hours) was given to all the women. The women were observed for clinical symptoms of chorioamnionitis. Clinical diagnosis of chorioamnionitis was considered with the presence of at least two of the following criteria –

- Temperature greater than100.4^{0}F before delivery,
- Maternal tachycardia,
- Uterine tenderness,
- Foul smelling vaginal secretions,
- Foul smelling amniotic fluid
- Maternal leukocytosis (TLC>20000)
- Foetal tachycardia,
- Positive maternal CRP,
- High vaginal swab positive.

Investigations were repeated (TLC, DLC and CRP twice weekly and HVS and AFIonce a week). Delivery was done in the following conditions

- Spontaneous onset of labour,
- Chorioamnionitis,

- Gestational age36weeks
- Placental abruption
- Fetal distress
- Absent liquor

After taking written consent for induction of labour pre induction Bishop's score was noted and induction was done with PGE2 gel. Caesarean section was performed only forobstetric indications. After delivery maternal and perinatal outcome was evaluated in both the groups.

Statistical analysis: The data collected were statistically analyzed by using chi-square test and paired-t test. A p-value of <0.05 was considered significant.

OBSERVATIONS

Table I: Demographic profile in both groups

Demographic profile	Group A (n=41) n(%)	Group B (n=59) n(%)	Statistical significance
Age Groups			
< 20 years	5 (12.19%)	10 (16.94%)	> 0.05 Not significant
21-30	32 (78.04%)	43 (72.88%)	
>30	4 (9.75)	6 (10.16%)	
Mean±SD	24.41±3.36	24.10±3.51	
Education			
Illiterate	24(58.53%)	41 (69.49%)	>0.05 Not significant
Literate	17 (41.46%)	18(30.50%)	
Occupation			
Housewife	30 (73.17%)	49 (83.05%)	>0.05 Not significant
Professional	3 (7.31%)	05 (8.47%)	
Labourer	8 (19.51%)	05 (8.47%)	
Socioeconomic status			
Lower	22 (53.65%)	35 (59.32%)	>0.05 Not significant
Middle	12 (29.26%)	15 (25.42%)	
High	7 (17.07%)	9 (15.25%)	

Table I shows demographic profile of both the groups. In our study, maximum number of women were between 21-30 years age group i.e. 32(78.04%) in group A and 43(72.88%) in group B followed by 5(12.19%) women in group A and 10(16.94%) in group B. Mean age in group A was 24.41±3.36 and 24.10±3.51 in group B. In the present study, maximum number of women i.e. 22(53.65%) in group A and 35(59.32%) in group B belonged to lower class and 12 (29.2%)in group A and 15(15.25%) in group B belonged to middle class. Only 7(17.07%) in group A and 9(15.25%) in group B belonged to high socio-economic class. Statistical comparison of both the groups showed insignificant difference (p >0.05).

Table II shows mode of delivery in both the groups. In our study, maximum number of women were delivered through vaginal delivery i.e. 22(53.65%) in group A and 54(91.52%) in group B. Only 19(46.34%) women in group A and 5(8.47%) in group B were delivered through cesarean section. On statistical comparison, we find significant difference between them (p<0.001).

Further, we distributed our patients according to vaginal delivery. We observed a total of 19(86.36%) women in group A and 40(74.07%) in group B delivered through spontaneous followed by 3 in group A and 10 in group B by induced method. Through augmentation, in group A no women delivered and in group B, a total of 4 women delivered. On statistical comparison, we find insignificant difference between them (p>0.05).

Table II: Mode of delivery in both groups

Mode of delivery	Group A (n=41) n (%)	Group B (n=59) n (%)	Statistical significance
VAGINAL	22(53.65%)	54(91.52%)	<0.001 Significant
CESAREAN	19(46.34%)	5(8.47%)	

Statistical significance by using Chi-square test

Table III: Distribution of patients according to vaginal delivery in both groups

Mode of delivery	Group A (n=22) n (%)	Group B (n=54) n (%)	Statistical significance
Spontaneous	19(86.36%)	40(74.07%)	>0.05 Not significant
Induced	3(13.63%)	10(18.1%)	
Augmentation	0	4(7.40%)	

Statistical significance by using Chi-square test

Table IV: Indication of caesarean section in both groups

Indications	Group A (n=19) n (%)	Group B (n=8) n (%)	Statistical significance
Abruptio	3(15.78%)	1(12.5%)	<0.01 Significant
Chorioamnionitis	5(26.31%)	2(25%)	
Cord prolapsed	2(10.52%)	0(0%)	
Fetal distress	9(47.36%)	1(12.5%)	
Failed induction	0(%)	4(50%)	

Statistical significance by using Chi-square test

MATERNAL OUTCOME

Table V: Maternal outcome in both groups

Maternal outcome	Group A (n=41) n(%)	Group B (n=59) n(%)	Statistical significance
Uneventful/Discharge	35(85.36%)	54(91.52%)	>0.05 Not significant
Retained placenta	1(2.43%)	0(%)	
Wound sepsis	3(7.31%)	3(5.08%)	
Chorioamnionitis	2(4.87%)	2(3.38%)	

Statistical significance by using Chi-square test

PERINATAL OUTCOME

Table VI: Birth weight in both groups

Birth weight	Group A (n=41) n(%)	Group B (n=59) n(%)	Statistical significance
Mean±SD	1.91±0.18	1.87±0.18	>0.05 Not significant

Statistical significance by using Student t-test

Table VII: Causes of perinatal death in both the groups (n=32)

Cause for neonatal mortality	Group A (n=2) n (%)	Group B (n=3) n (%)	Statistical significance
Low birth weight	1(50%)	1(33.33%)	>0.05 Not significant
RDS	0	1(33.33%)	
Sepsis	1(50%)	1(33.33%)	

Statistical significance by using Chi-square test

Table IV shows indication of caesarean section in both the groups. Above table shows maximum number of women with fetal distress in group A 9 (47.3%) and 1(12.5%) in group B and for chorioamnionitis 5(26.31%) in group A and 2 (25%) in group B followed by failed induction in group B 4(50%). On statistical comparison, we find significant difference between them (p<0.01).

Table V shows maternal outcome in both the groups. We found majority of women were discharged i.e. 35(85.3%) in group A and 54(91.52%) in group B. Wound sepsis was found in 3 women in group A and B each. On statistical comparison, we find insignificant difference between them (p>0.05).

Table VI shows mean birth weight in both the groups. We found mean birth weight in group A was 1.91±0.18 and in group B it was 1.87±0.18, almost comparable to group A. Statistical comparison of both the groups found to be insignificant (p>0.05).

Perinatal death in both the groups were due to low birth weight i.e. 1 baby each followed by sepsis (1 each in both group). Statistical comparison of both the groups found to be insignificant (p>0.05).

DISCUSSION

Socio-economic status: Majority of cases group A (53.55%) and group B (59.32%) were from low socioeconomic status, which was almost equal to that of Swathi Pandey (2000) [6] (61%). PROM is more

prevalent in low socio economics status. Studies have shown that defects in the amniotic membranes occur due to low socio economic status associated with factors like malnutrition, over exertion, poor hygiene, stress high parity recurrent genitourinary infection and anemia. The risk of PROM increases with decrease antibacterial activity in the amniotic fluids of patients with low socio economics status.

Maternal outcome: A total of 14.61%in group A and 8.46%in group B complications occurred in the present study e.g. wound sepsis in group A 7.31% and group B 5.08% chorioamnionitis in group A 4.87%and group B 3.38% Osmanagaoglu et al (2005) the rate was 12.2% 2006. [7] Raunt and Dora (1988) who had shown direct relationship of rise of chorioamnionitis with prolonged PROM delivery interval. [8] Borna et al in (2004), [9] found significant correlation between AFI<5 and higher rate of chorioamnionitis. Vintzileos et al in (2000) which showed that there was no relationship between chorioamnionitis and oligohydramnios. [10]

Neonatal Morbidity: The incidence of neonatal morbidity is in group A (46.3%) and in group B (27.10%), which was comparable with KamlaJayram (2001) (21.7%). [11] The commonest type of neonatal morbidity in group A is RDS (58.33%) which is similar to study of Piazze et al (2007) (70%), [12] group B is septicemia (46.6%) Vintezileos et al (2000) [10] reported association between oligohydramnios and increase of infections and perinatal mortality. Gonik et al (1985) and mercer et al (2006) did not find any association between [13] AFI <5 and neonatal infections morbidity.

Perinatal mortality: Perinatal mortality in this study group A 4.87% and group B was 5.08 % which was less than study done by Woods at al [14] 13% of cases.

CONCLUSION

PPROM is significant obstetric problem. It contributes to increased maternal morbidity as well as perinatal morbidity and mortality. Careful antenatal monitoring, detection and prompt treatment of infection is necessary. Strict aseptic precautions, appropriate therapy, and proper antenatal follow up are important factors in prevention and management of PPROM.

From this study we arrive at the conclusion that management should not be generalized regime. Based on present findings, it can be concluded that low socioeconomic, younger, illiterate parturient women were found to be provoking factors to increased PPROM. Out of all other laboratory investigations HVS is only statically significant in our study. Danger of infection to both mother and fetus increases with increased duration of PROM. Our experience to date from available sources suggests that management of PPROM still requires critical study.

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