

PREMATURE RUPTURE OF MEMBRANE - A CLINICAL STUDY

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SUMMARY

One hundred and four patients with premature rupture of membranes (PROM) and no other obstetric complications who presented to the Department of Obstetrics and Gynaecology, JIPMER Hospital, Pondicherry, over a period of one year were studied. Equal number of normal deliveries were taken as controls. The proportion of term PROM was 79% and preterm premature rupture of membranes (PPROM) was 21%. Coital activity and cervicovaginitis were found to significantly increase the risk of PROM. Incidence of LSCS was high (45.2%) compared to controls. There were no maternal deaths, but maternal morbidity was high (20.19%). Both birth asphyxia and neonatal sepsis were found to be significantly associated with PROM.

INTRODUCTION

Premature rupture of membranes (PROM) is one of the most common complications of pregnancy that has a major impact on fetal and maternal outcome. The overall incidence ranges from 2-18% (Gunn et al, 1970). It is one of the commonest clinical events where a traditional pregnancy can turn into a high risk situation for the mother as well as the fetus. The obstetrician is

invariably at a dilemma regarding the future plan of management and PROM still remains controversial and challenging. The present study was undertaken to evaluate the etiological factors and maternal and perinatal morbidity and mortality associated with this important obstetric problem.

MATERIALS AND METHODS

This prospective case control study was carried out in the department of Obstetrics and Gynaecology at JIPMER Hospital,

Pondicherry during a period of one year (June 1992 to May 1993). The study group comprised of 104 consecutive pregnant women with singleton pregnancies. Those who fulfilled the following criteria were included in the study.

- a) History suggestive of PROM
- b) Demonstration of leaking P/V on speculum examination
- c) Cervical dilatation of less than 3 cm
- d) No definite uterine contractions
- e) Vertex presentation with no additional obstetric complications which would otherwise indicate immediate abdominal delivery.

Detailed history including the parity, previous pregnancy outcome, coital activity in the preceding one month, prior cervical surgery, genital infection, time of rupture of membranes and any intervention before admission were recorded. They were managed with active intervention, irrespective of gestational age. Equal number of patients with no obstetric complications were taken as controls. In the study group, labour was induced with oxytocin drip/pump after noting the Bishop score. Antibiotics were started at admission if duration of PROM was more than 6 hours or if there was history of vaginal examination done outside. Once fetal distress was detected, pregnancy was terminated by LSCS/vaginal operative procedures. In the control group, labour was augmented whenever cervical dilatation was less than 1 cm/hr.

Maternal and fetal outcome were recorded. Multiple cultures were taken from the mother and the baby whenever indicated. All the patients and their neonates were followed up till discharge from the hospital.

The variables were studied in each group separately and compared with controls. The data was analysed using Chi-Square test.

OBSERVATIONS

Majority belonged to the age group of 20-29 years (76.9% and 81.7% respectively) in both the groups. Risk of PROM was found to increase with age. Only 52% patients in the PROM group received antenatal care compared to 63.5% in the control group. The risk of PROM in unbooked patients was statistically significant ($P < 0.05$). Out of 104 cases, 92 belonged to low socio-economic group.

There were 22 cases of PROM, out of which 7 (6.7%) were less than 34 weeks gestation. In 16 patients with PROM, there was history of vaginal examination done by untrained traditional birth attendants. The duration of PROM ranged from 3 hours to 5 days, the mean being 16 hours in both term and preterm cases. Table I shows risks for PROM. Coitus and lower genital tract infection are found to be significant risk factors for PROM ($P < 0.05$).

There was no statistically significant difference between the two groups, as regards the duration of first and second stages of labour. Number of per vaginal examinations contributed to increased infection rate in patients with PROM ($P < 0.05$).

Table II shows the mode of delivery in relation to parity. High incidence of Caesarean section was recorded in patients with PROM, main indication being prolonged labour with unfavourable cervix. LSCS due to undiagnosed CPD due to big babies was the indication in 4.8% of cases. There was no difference in the number of vaginal operative deliveries. Failure of

Table I
Risk factors for PROM

Factors	PROM		CONTROL	
	No.	%	No.	%
Coitus	53	50.96(P<0.01)	31	29.81
Travel	20	19.23(NS)	19	18.27
Cervicovaginitis	23	22.12(P<0.01)	5	4.81
Cervix Surgery	12	11.54(NS)	11	10.58
AN Vaginal exam.	30	28.85(NS)	33	31.73

NS - Not Significant.

Table II
Mode of delivery

Mode of Delivery	PRIMI		MULTI		TOTAL		CONTROL	
	P	C	P	C	No.	%	No.	%
LSCS	32	3	15	0	47	45.2	3	2.9
Normal Vaginal delivery	21	48	23	40	44	42.3	88	84.0
Forceps delivery	6	12	2	0	8	7.6	12	11.5
Vacuum rotation and extraction	5	1	0	0	5	4.8	1	0.96

Table III
Maternal morbidity - PROM cases

Complications	No.	%
Chorioamnionitis	6	5.76
Postpartum hemorrhage	2	1.92
Puerperal fever	21	20.19
Wound infection	8	7.69
Puerperal sepsis	9	8.65
Urinary tract infection	4	3.85

Table IV
Neonatal morbidity

Complications	PROM		CONTROL	
	No.	%	No.	%
Septicemia	12	11.5	2	1.9
Pneumonitis	6	5.8	Nil	
Meningitis	3	2.9	Nil	
Prematurity	22	21.2	8	7.7
Respiratory distress	19	18.3	2	1.9
Meconium aspiration	5	4.8	Nil	
Convulsions	5	4.8	2	1.9
Umbilical sepsis	6	5.8	Nil	
Conjunctivitis	23	22.1	9	8.7
Superficial skin infections	6	5.8	2	1.9

secondary powers was the major indication in both the groups.

Table III shows maternal morbidity in PROM patients. Out of 21 patients who had puerperal fever, 20 had undergone LSCS. It was found that 29.8% of the babies were asphyxiated in PROM group in contrast to 10.5% in controls. Table IV shows neonatal morbidity. Commonest morbidity was prematurity which also contributed significantly to mortality. There were 5 neonatal deaths, out of which 3 were due to prematurity. Out of 2 term babies, 1 had severe birth asphyxia and other had meconium aspiration.

DISCUSSION

PROM is one of the common and challenging problems in perinatal medicine today. The management is one of the most controversial problems in obstetrics and has gone through various cycles of masterly inactivity to immediate intervention.

Various factors have been implicated in the causation of PROM, of which maternal genital tract infection plays a major role directly and indirectly. In the present study there was cervicovaginitis in 22% of cases. Though clinically inapparent, infection is shown to be associated in approximately 30% of cases with PROM, especially preterm PROM (Johnson et al, 1981).

The mean age of the patients with PROM was significantly higher compared to the controls, which is similar to the studies done earlier. It was shown that advanced maternal age, non-white race, multiparity, instrumentation of cervix prior to pregnancy, cigarette smoking, incompetent cervix, low pregnancy weight gain and recent coitus are associated with PROM (Naeye and Peters, 1980). In our study, 3 patients had Manchester repair and 9 of them had D & C previously. However, in the

control group also 11 patients had D & C prior to the pregnancy.

One of the major risk factor for PROM was found to be coitus in the preceding one month (Rayburn and Wilson, 1980), even though some studies have failed to show this association (Mills et al, 1981). In our study, no significant risk of PROM associated with antenatal vaginal examination was found though some authors have reported such an association (Lenihan, 1984). Patients who had antenatal care had less risk of PROM compared to unbooked patients. Many studies have shown that defects in the membranes may arise because of poor nutritional status, which is significantly influenced by the socioeconomic status of the patients (Artal et al, 1976 ; Harger et al, 1990).

There was no difference in the duration of first and second stages of labor between PROM and control groups; this was similar to the findings in other studies (Cammu et al, 1970). The major maternal complication of PROM is chorioamnionitis. The reported incidence varies from 3 to 31%. In the present study, the incidence of chorioamnionitis was 5.76%. The lower incidence may be due to routine use of prophylactic antibiotics. Incidence of maternal morbidity was as high as 20.19% and there was no maternal death. This was similar to the findings in other studies which found that despite the modern antibiotic postpartum infection remains high in patients with chorioamnionitis (Gante et al, 1982).

In the presence of infection, risk of operative delivery is increased especially in patients with low Bishop

score. In our study, irrespective of parity, Caesarean section rate was high. Out of 28 patients with unfavorable cervix, 26 (92.9%) had LSCS.

Incidence of PROM was 21% which is comparable to that reported in previous studies (Naeye, 1977). Gestational age at the time of delivery strongly affects the neonatal morbidity and mortality secondary to PROM (Taylor et al , 1983). Major risk in a term fetus is sepsis and increased need for neonatal resuscitation (Kilbride et al, 1989). It was found that prematurity and its complications were the main hazards before 34 weeks, as also reported by other studies (Fayez et al, 1978). Overall perinatal mortality was 4.8% which was mainly due to respiratory distress syndrome.

Drawbacks :

However, one has to realise that in this study, the patients were matched only in terms of parity. Matching them by Bishop score would have enabled better comparison of both the groups.

CONCLUSION

PROM is a significant obstetric problem. It contributes to increased maternal morbidity as well as perinatal mortality and morbidity. Careful antenatal monitoring, detection and prompt treatment of infection, pelvic examination under strict aseptic precautions and appropriate therapy are important factors in the prevention of PROM. Prophylactic antibiotic therapy is recommended to prevent infection and its complications. Better intensive neonatal care will improve the outcome

in these cases.

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