

PREMATURE RUPTURE OF MEMBRANES : AN ASSESSMENT FROM A RURAL MEDICAL COLLEGE OF WEST BENGAL

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SUMMARY

The present study is an assessment of the maternal outcome of labour, mortality and morbidity and foetal outcome of cases of PRM (400 cases) admitted in a rural Medical College of West Bengal. The following were the observations:

- (a) Rupture of membranes before onset of labour was associated with labour of shorter duration than when the membrane was intact till the late first stage.
- (b) The above was true for both primipara and multipara.
- (c) The incidence of operative delivery was not significantly increased in cases of premature rupture of membranes (PRM); relative incidence was more marked in primipara than multipara.
- (d) Foetal mortality was not increased although foetal asphyxia rate was higher.
- (e) Incidence of puerperal sepsis and PPH was not influenced by PRM.

Introduction

The term premature rupture of membranes (PRM) is defined as spontaneous rupture of membranes and escape of liquor amnii, before onset of labour, occurring before 37th week of gestation as designated by Burchell (1964) or in case where labour pain did not ensue within an hour of rupture of membranes irrespec-

tive of duration of pregnancy as postulated by Greenhill (1966).

Obstetricians, from very ancient days, were of the opinion that PRM might bring in complications like worse outcome of labour infection (Eastmen and Hellman 1966; Russel and Anderson 1962) and increased perinatal mortality and morbidity (Hoffmeister, 1962; Russel and Anderson 1962).

The present study has been undertaken to assess the outcome of labour

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maternal mortality and morbidity and foetal outcome of cases of PRM admitted in a rural Medical College of West Bengal, Bankura Sammilani Medical College, Dist. Bankura, West Bengal.

Materials and Methods

The study was conducted on 400 cases of premature rupture of membranes (PRM) admitted in the Department of Obstetrics and Gynaecology of B.S. Medical College, Bankura, a rural Medical College of West Bengal, during the years 1984 to 1986.

Only those cases were selected whose rupture of membranes occurred in pregnancy of more than 38 weeks gestation. The series consisted of 102 cases of primigravida and 298 cases of multigravidae.

The associated complications like contracted pelvis, elderly primiparity, multiple pregnancy, malpresentations etc. were excluded from the study as far as possible from clinical assessment. This was done because these factors by themselves, might produce some modifying influence on the course and outcome of labour.

The criteria for the terminology of rupture of membranes, as observed by Nagey (1986) had been used in the present series. The authors have not drawn any line of demarcation between premature and early rupture of membranes.

Diagnosis was based on (i) clinical history of passage of liquor, (ii) gross palpable observation through cervical canal and (iii) subsequent pooling of the fluid in the posterior fornix as seen by speculum, with pressure on uterine fundus (Russel and Anderson 1962).

Confirmation of the fluid to be liquor amnii was based on (i) alteration in the pH

of the vaginal fluid by pH paper test (Baptisti, 1938); (ii) arborisation test on vaginal fluid (Reece et al 1984); (iii) demonstration of fat droplets, lanugo hairs and epithelial cells in the vaginal fluid (Smith, 1976).

Effect of PRM was observed on (i) length of labour, (ii) nature of delivery, (iii) foetal mortality and (iv) maternal morbidity.

Results

There were 400 cases in total having premature rupture of membranes, occurring before onset of labour and in early stages of labour (Table I). 192 cases had rupture in labour, 118 cases had the rupture in the late 1st stage and 90 cases showed rupture before onset of labour. Most of the cases, i.e. 340 cases were delivered within 24 hours of rupture of membranes, and a bulk of them were delivered (186) within 12 hours (Table I).

The duration of labour (Table II) was shorter than 12 hours in multigravidae (96.7%) and longer than 12 hours in primigravidae (90.7%).

Most of the cases with PRM (Table III), both primipara and multipara, were delivered normally (87%) and caesarean section was required only in 3.5% cases. The incidence of assisted delivery (forceps & C.S.) was higher in primipara than in multipara

Out of 400 deliveries, 272 babies were born healthy in spite of PRM (Table IV) and rest 128 (32%) were unhealthy. Out of these unhealthy babies 108 (27%) could be revived though born asphyxiated, but 14 babies (3.5%) could not be revived, and 6 (1.5%) were still born i.e. 20 babies (5%) were lost.

TABLE - I
DURATION OF LABOUR IN RELATION TO STAGE OF LABOUR
AT THE TIME OF RUPTURE OF MEMBRANES

Time of Rupture of Membrane	Duration of labour				Total	%
	Less than 12 Hours	12 to 24 Hours	24 to 48 Hours	More than 48 Hours		
Before onset of Labour	62	24	0	4	90	22.5
Rupture in early Labour (Half Dilation)	78	102	8	4	192	48.0
Rupture in Late 1st Stage	46	28	40	4	118	29.5
Total	186	154	48	12	400	
%	44%	38.5%	12.0%	3.0%	100.0%	

TABLE - II
DURATION OF FIRST STAGE OF LABOUR IN HOURS IN CASES (90) WHERE PRM OCCURRED BEFORE ONSET OF LABOUR IN RELATION TO PARITY

Duration of First Stage	Primigravidae	Multigravidae	Total
Less than 12 hours	2 (3.3%)	60 (96.7%)	62 (100%)
More than 12 hours	25 (90.7%)	3 (9.3%)	28 (100%)

TABLE - III
NATURE OF DELIVERY OF CASES OF PRM IN RELATION TO PARITY

Parity	Total	Normal Delivery	Forceps	Caesarean Section
Primipara	102 (100%)	74 (73.9%)	20 (19.9%)	8 (7.9%)
Multipara	298 (100%)	274 (91.9%)	18 (6.03%)	6 (2.01%)
Total	400 (100%)	348 (87.0%)	38 (9.5%)	14 (3.5%)

TABLE - IV
EFFECT ON FOETUS IN RELATION TO DURATION OF LABOUR IN CASES OF PRM

Duration of Labour in hours	Healthy Baby	Unhealthy Baby	Total	Asphyxiated and Revived	Asphyxiated and could not be Revived	Still born
Less than 12 hours	144	46	190	46	0	0
12 to 24 hours	88	66	154	58	6	2
24 to 48 hours	36	8	44	2	4	2
48 and more	4	8	12	2	4	2
Total	272 (68.0%)	128 (32.0%)	400 (100%)	108 (27%)	14 (3.5%)	6 (1.5%)

In spite of PRM (Table V) 270 (67.5%) cases had normal vaginal delivery with uneventful puerperum. 52 cases (13%) had assisted delivery which included forceps delivery and LSCS. Puerperal pyrexia was noted in 17.5% and there were 2 cases of maternal death in the whole series during early puerperium with clinical evidence of bacteriaemic shock. The incidence of post-partum haemorrhage was however, 1.5% in the present series.

2.6%. The incidence of PRM varies greatly from institution to institution, from 2 to 15% and is still higher viz. 15 to 45%, when patients of preterm labour were included. (Eastman and Hellman, 1966; Crenshaw, 1986).

Russel and Anderson (1962) observed that labour occurs within 24 hours after 36 weeks of gestation in 80% of cases. Eastman and Hellman (1966) opined that

TABLE - V
EFFECT OF PRM ON MATERNAL MORTALITY AND MORBIDITY

Normal Delivery/ Normal Puerperium	Operative Delivery	PPH	Puerperal Fever	Death
270 (67.5%)	52 (13.0%)	6 (1.5%)	70 (17.5%)	2 (0.5%)

The neonatal morbidity (Table VI) was observed in 31 cases (8.1%) of which 10 healthy babies and 21 asphyxiated babies were affected. Pneumonitis, fever, cerebral irritation was observed in asphyxiated babies in higher number. There were 4 deaths in healthy affected babies and 12 deaths amongst asphyxiated babies.

the lag period or latent period (i.e. interval between PRM and onset of labour) was less than 24 hours in 80 to 90% of cases of pregnant mothers with PRM at or near term. In the present study the incidence is still higher (94.6%).

According to Calkins (1952), the duration of 1st stage of labour in cases with PRM was 10 hours and 6 hours in

TABLE - VI
NEONATAL MORBIDITY AND MORTALITY IN PRM CASES

Healthy Baby	Total	Total Morbidity	Pneumonitis	Fever	Cerebral Irritation	Death
Healthy Baby	272	10	2	5	2	4
Asphyxiated Baby	108	21	10	6	6	12
Total	380	31 (8.1%)	12 (3.1%)	11 (2.9%)	8 (2.1%)	16 (4.2%)

Discussion

The study includes 400 cases of PRM out of total delivery of nearly 15000 during this period of two years. So the incidence of PRM in this hospital appears to be about

primigravidae and multigravidae respectively. In the present series, the 1st stage was less than 12 hours in 96.7% of multiparae and more than 12 hours in 90.7% of primigravidae.

Operative intervention, in the present series, was at par with the cases who had no PRM. Caesarean section was not more frequent (Calcutta Hospitals, average 3%) and forceps applications were needed as frequently as in other cases.

Still births and neonatal deaths were not higher in cases with PRM as compared to other cases.

In the present series, caesarean section was needed in 3.5% cases of PRM where as Eden Hospital, Calcutta, figures showed an incidence of 9.5% inclusive of all indications. This might be due to conservative treatment done on PRM cases, keeping in mind the chances of postoperative complications after PRM.

Burchell (1964) could not find any difference in perinatal mortality and maternal mortality whether kept in hospital or released undelivered. In the present study, no patient was allowed to go home undelivered. Forceps delivery was done in 9.5% of cases of PRM (Eden Hospital statistics, 1986 showed 10.3% of all cases) and post-partum haemorrhage was recorded in 1.5% of cases (Eden Hospital, 1986, 0.49%). Puerperal rise of temperature of more than 100.4°F was noted in 18% of cases but was amenable to treatment in most of the cases. Two cases had evidence of bacteraemic shock and in spite of full antibiotic cover, steroid and blood transfusion, could not be revived. The possibility of bacterioides or anaerobic bacterial infection might be considered as the possible agent of infection not detected by ordinary cultural procedure and also not amenable to ordinary antibiotic and chemotherapeutic agents. (Miller et al, 1980 and Alger et al, 1985).

According to Hoffmeister (1962) in some cases of PRM, it might be too late to

salvage either the mother or the baby even with full antibiotic cover. Webster, (1969) observed that in cases with PRM with long latent period even in absence of overt symptoms of infection, the condition might suddenly become fulminant and prove to be fatal. Recently, similar cases, have been accounted for anaerobic bacterial infections, which are not detectable by ordinary cultural procedure, and are detected only by special cultural methods (Ragan et al, 1981 and Minkoff et al, 1984) which was not available in the Institution where the study was made.

PRM, in the present series, did not show any increased incidence on perinatal mortality and perinatal infection. Taylor et al (1961) did not believe any influence of PRM on perinatal mortality of mature infants. Eastman and Hellman (1966) claimed it to be four fold for mature infants. Russel and Anderson (1962) observed that perinatal infection may be caused without overt maternal infection.

This study again proves that the observations on PRM by obstetricians from different corners and in different decades are controversial.

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