MATERNAL OUTCOME IN PREMATURE RUPTURE OF MEMBRANE - A STUDY DONE IN THE TERTIARY LEVEL SPECIALIZED HOSPITAL IN BANGLADESH

ADHIKARY S[1], TANIRA S[2], SULTANA A[3], WAZED F[4], CHOWDHURY SB[5]

Abstract:

Context: *Premature rupture of membrane is defined as spontaneous rupture of membrane before the initiation of labour, which is one of the most common complications of pregnancy having a major impact on maternal outcome. The aim of the present study is to find out the effect of premature rupture of membrane on maternal outcome.*

Methods: *A cross-sectional study was done in the Department of Obstetrics and Gynaecology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from February to July of 2008, on 50 pregnant women with more than 28 weeks of pregnancy both primigravid and multigravid with rupture of membranes prior to labour. Women who were admitted with rupture of membranes with established labour, or having antepartum haemorrhage, pre-eclampsia or eclampsia were excluded from the study. Out of 775, 95 patients were admitted with history of premature rupture of membrane (PROM). Among those patients, 50 cases were included in this study as per inclusion and exclusion criteria.*

Results: *In this study, onset of labour was spontaneous in 30 cases (60%), 35 cases (70%) developed labour within 24 hours of rupture of membranes and 2 patients (4%) had latent period exceeding 7 days. Among those 50 patients, 24 i.e. 48% (primigravida 12 and multigravida 12) had normal vaginal delivery and 26 i.e. 52% (primigravida 16 and multigravida 10) underwent Caesarean section. 5 patients (10%) developed puerperal sepsis (primigravida 1 and multigravida 4).*

Key words: *Premature rupture of membrane, Maternal outcome, Caesarean section.*

J Dhaka Med Coll. 2013; 22(1) : 26-29.

Introduction:

Premature rupture of membrane (PROM) is defined as spontaneous rupture of membrane before the initiation of labour. It is one of the common complications of pregnancy that has a major impact on maternal outcome. PROM affects 2.7% - 17% of all pregnancies and however, in most cases, it happens spontaneously[1]. Under normal circumstances the fetal membranes rupture during the active phase of labour but PROM occurs before the onset of uterine contraction. When rupture of membrane occurs beyond 37 weeks of pregnancy, it is called term PROM and when it occurs before 37 completed weeks it is called preterm PROM. The rupture of membranes for >24 hours before delivery is called prolonged rupture of membrane. PROM is responsible for about 30% of all preterm delivery and its consequences[2]. Preterm PROM is associated with significant maternal risks. preterm PROM occurs in 3% of all pregnancy and contributes to approximately one-fourth to one-third of preterm births[3]. Accurate assessment of the integrity of the membrane is very essential, because increased risk of infection, placental abruption, cord prolapse are observed with PROM[4,5,6]. The aim of the present study is to find out the effect of PROM on maternal outcome and enrich the knowledge pool for the

1. Dr. Sanchita Adhikary, Junior Consultant, Department of Obstetrics & Gynaecology, Jessore Sadar Hospital, Jessore.
2. Dr. Shaorin Tanira, Coordinator (Health), MCH-FP Clinic, Manabik Shahajya Sangstha (MSS), Dhaka.
3. Dr. Arifa Sultana, Registrar, Department of Obstetrics & Gynaecology, Apollo Hospitals, Dhaka.
4. Dr. Feroza Wazed, Assistant Professor, Department of Obstetrics & Gynaecology, Dhaka Medical College & Hospital, Dhaka.
5. Prof. Saleha Begum Chowdhury, Professor, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

Correspondence: Dr. Sanchita Adhikary, Junior Consultant, Department of Obstetrics & Gynaecology, Jessore Sadar Hospital, Jessore.

obstetricians to ensure correct management of PROM, which can ultimately reduce the mortality & morbidity caused by it.

Methods:

This was a cross-sectional study. Fifty pregnant women both primigravid and multigravid with rupture of membranes were included in this study. These patients were admitted and treated in the Department of Obstetrics and Gynaecology in Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from February to July of 2008.

Inclusion criteria:

1. Both primigravid and multigravid women with PROM.
2. Duration of pregnancy is more than 28 weeks.
3. History of spontaneous rupture of membrane before initiation of labour.

Exclusion criteria:

1. History of rupture of membrane with established labour.
2. Women who are suffering from antepartum haemorrhage, pre-eclampsia, or eclampsia.

After admission, detailed history of presenting complaints including duration of pregnancy, duration of rupture of membrane, lower abdominal pain, past history of rupture of membrane, past obstetric history were taken. Gestational age was determined from first date of the last menstrual period (LMP), early ultrasonographic study, clinical examination and previous antenatal records. Moreover, socio-economic condition and special records e.g. coital habit, previous MR, D&C also were documented. After taking the history a general and per abdominal examination was done for every patient. Then a sterile per speculum examination was done to assess cervical condition and stage of labour. Relevant investigations were also done to confirm diagnosis, select management strategy and exclude the other possibilities.

Diagnosis of rupture of membrane was done by:

i. History of a gush of fluid from the vagina
ii. Continuous leakage of fluid from the vagina
iii. Demonstration of amniotic fluid leakage from the cervix by a sterile speculum examination or pooling of amniotic fluid in posterior vaginal fornix.
iv. Demonstration P^H of the vaginal fluid by litmus paper.
v. Demonstration of oligohydramnios by ultrasonography as a supporting method (when available).

High vaginal swab was taken from all patients when per speculum examination was done and was sent for culture and sensitivity. On admission blood sample was sent of leukocyte count (*both the Total Count and Differential Count*) for every patient.

Diagnosis of chorioamnionitis was based on the presence of maternal fever (100.4^0 F for 38.7^0C) and two or more of the following findings:

i. Maternal tachycardia (>100 beats/min)
ii. Fetal tachycardia (>160 beats/min)
iii. Uterine tenderness
iv. Foul smelling vaginal discharge
v. Maternal leaucocytosis ($\geq$ 15000/mm^3)

Plan of management of patient with PROM was decided on the condition of the patient duration of pregnancy, duration of membrane rupture and intervention already made, patient admitted with the feature of the chorioamnionitis was given broad spectrum antibiotic in parenteral route and labour was augmented by induction or underwent for Caesarean section. Patient with PROM >37 weeks gestation with ripe cervix were induced by oxytocin for delivery. Uninfected patients with unripe cervix and patients with PROM <34 weeks were managed by conservative approach with prophylactic administration of antibiotics. Patents were advised for bed rest with bathroom facilities and asked to use vulval pad to detect colour change or malodour. Patients were monitored 4 hourly to look for signs and symptoms of chorioamnionitis and fetal distress. White blood cell counts were performed daily. If any sign or infection or foetal distress

developed, conservative approach was abandoned and labour was induced/ augmented. In selected cases of preterm premature rupture of the membrane (< 34 wks. gestation) where no evidence of infection found, steroid (e.g. betamethasone) was used for fetal lung maturation. In some selected cases (where no fetal distress, infection or bleeding was evident) tocolytic agent was used for prolongation of pregnancy in which spontaneous labour occurred. After initial evaluation, per vaginal examination was avoided. Indications of immediate delivery included chorioamnionitis, advanced labour, failed tocolysis, fetal death and vaginal bleeding. Diagnosis of the maternal puerperal sepsis was based on the presence pyrexia, offensive lochial discharge, lower abdominal tenderness and high vaginal swab culture.

Data Collection:

An informed consent was taken from each of the participants of the study. A semi-structured questionnaire was prepared and the data were collected by directly questioning the patients and by physical examination, daily follow up of patients till their discharge from the hospital.

Results:

During the study period, a total of 775 pregnant women were admitted for delivery into BSMMU Hospital. Among them, 95 patients were admitted with history of PROM (12.25%). Among those patients, 5 (0.64%) had gestational age <34 weeks, 30 (3.87%) had gestational age between 34 and 37 weeks, 62 (7.74%) had gestational period >37 weeks. Out of 95 cases of PROM, 50 cases were included in this study as per inclusion and exclusion criteria mentioned earlier. In this study, onset of labour was spontaneous in 30 cases (60%), 35 cases (70%) developed labour within 24 hours of rupture of membranes and 2 patients (4%) had latent period exceeding 7 days. Among those patients, 24 (primigravida 12 and multigravida 12) had normal vaginal delivery (48%) and 26 (primigravida 16 and multigravida 10) underwent Caesarean section (52%). 5 patients (10%) developed puerperal sepsis (primigravida 1 and multigravida 4). The results of study are shown in Table-I, II, III.

Table-I

Demographic features of the patients (n=50)

Age (years)	Number of patients	Percentage (%)
15-19	08	16
20-24	12	24
25-29	21	42
30-34	07	14
35-39	02	04
Gravida		
1^{st}	28	56
2^{nd}	08	16
3^{rd}	07	14
4^{th}	04	08
$\geq 5^{th}$	03	06
Education		
Illiterate	02	04
Primary education	10	20
Upto Class X	05	10
SSC	06	12
HSC	09	18
Graduate and above	18	36
Occupation		
Housewife	30	60
Service holder	20	40
Monthly income (BDT)		
Upto 5000	17	34
5000-10000	18	36
10000-15000	10	20
>15000	05	10

Table-II

Distribution of mode of delivery with parity (n=50)

	GravidityMode of delivery				P value
	Normal vaginal delivery		Caesarean section		
	No.	%	No.	%	
Primigravida	12	24	16	32	0.592
Multigravida	12	24	10	20	
Total	24	48	26	52	

Table-III

Indication of Caesarean section (n=26)

Indication	Number of patients	Percentage (%)
Breech presentation	4	15.40
Transverse lie	3	11.50
Failed induction	3	11.50
Cervical dystocia	2	7.70
Occipito posterior	2	7.70
Deep transverse arrest	1	3.85
History of previous Caesarean section	7	26.92
Fetal distress	4	15.40

Discussion:

In this study, onset of labour was spontaneous in 30 cases (60%), 35 cases (70%) developed labour within 24 hours of rupture of membranes and 2 patients (4%) had latent period exceeding 7 days. About 70% of patients delivered within 24 hours of onset of labour 48% of the patients had normal vaginal delivery and 52% cases were delivered by Caesarean section. These findings are similar to the findings previous studies[7,8]. Bangabandhu Sheikh Mujib Medical University (BSMMU) is a tertiary level teaching and specialized hospital and always burdened with referred and complicated cases[7]. In this study, hospital stay following delivery of PROM cases was short. Because of scarcity of hospital beds, patients were discharged early after normal vaginal delivery. Patient's compliance of follow up examination was very poor. Maternal morbidity following PROM is quite high in our country[9]. An increase in operative delivery rate increases postpartum infection rate up to many fold[9,10]. Puerperal sepsis was frequent (l0% of cases). Multiparous women had a greater percentage (80%) of chorioamnionitis in present study than did primiparous mother (20%). It may be that bacteria invading the endocervix are more often harboured there. It continue to seed the nearby fetal membranes and amniotic fluid when the cervix has been damaged by previous delivery[11]. This finding is similar to Chowdhury et al.[10]. However, in this study there was no maternal death. This is unlike the findings of Akter, Akter and Rashid[7], Chowdhury et al.[10] and Nazneen[12]. We recommend further studies with larger study participants and both in rural and urban areas.

Acknowledgement:

We would like to thank the authority of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, for the kind permission to carry out the study and the participants for their enormous cooperation.

References:

1. Arias F. Premature rupture of membranes. 3rd ed. New York: Mosby; 1993.
2. Dutta DC. Premature rupture of membranes. In: Text Book of Obstetrics, 6th ed. 2006.
3. Mercer BM. Preterm premature rupture of membrane. Obstet Gynecol 2003; 101: 178-93.
4. Shim SS, Remearo R, Hung JS, Park CW, Jun JK, Kim BI, et al. Clinical significance of intraamniotic inflammation in patients with PROM. Am J Obstet Gynecol 2004; 191: 1339-45.
5. Mercer BM, Miodovnik M, Thurner GR, Goldenberg RL, Das AF, Ramsey RD, et al. Antibiotic therapy for reduction of infant morbidity after PROM, a randomized controlled trial. JAMA 1997; 278: 989-5.
6. Kenyon SL, Taylor DJ, Tarnow-Mordi W, ORACLE Collaborative Group. Broad-spectrum antibiotics for preterm, prelabour rupture of fetal membranes: the ORACLE-I randomised trial. ORACLE Collaborative Group. Lancet 2001; 357(9261): 979-88.
7. Akter S, Akter R, Rashid M. Preterm prelabour rupture of the membrane & feto-maternal outcome: an observational study. J Bangladesh Coll Phys Surg 2010; 28(1): 17-23.
8. Tasnim S, Bhuiyan AB. Outcome of premature rupture of membranes. Bangladesh J Obstet Gynaecol 1998; 13(1): 16-20.
9. Sultana J, Chowdhury TA, Khan MH, Begum K. Amniotic fluid index values after preterm premature rupture of the membranes and subsequent prenatal infections. Bangladesh J Obstet Gynaecol 2005; 20(2): 51-5.
10. Chowdhury SR, et al. Incidence and outcome of preterm premature rupture of membranes and preterm labour at Holy Family Red Crescent Medical College Hospital. Bangladesh J Obstet Gynaecol 2005; 20(1): 19-24.
11. Bhide AG. Premature rupture of membranes. In: Krishna U, Tank DK, Daftary S. eds. Pregnancy at risk: current concepts. 3rd ed. New Delhi: Jaypee; 1997.
12. Nazneen A. Maternal and fetal outcome in premature rupture of membrane [Dissertation]. Dhaka: Bangladesh College of Physician and Surgeon (BCPS); 2002.