Original article:

Maternal and Neonatal outcome in premature rupture of membranes.

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Abstract:

Objective: The objective of the study was to assess the maternal and neonatal outcome in premature rupture of membranes. ***Material and Methods:*** A prospective study was carried out in the department of Obstetrics &Gynae in Ibn Sina Medical College hospital from October'15 to September'16. The sample size was 110. The maternal and neonatal outcome of pre-labour rupture of membranes in both term and preterm pregnancies was observed and statistically analyzed. ***Results:*** Incidence of PROM (premature rupture of membrane) was commonly in primigravida (62.7%). Term PROM was higher (70.92%) than PPROM (29.09%). Aetiological analysis revealed cause is unknown in most of the cases. Infection in 26.4% cases, previous history of PROM 16.3% and history of recent coitus 9.09% cases. Patient delivered by vaginal route 70.91% and LSCS 29.09%. The PROM had higher maternal morbidity (27.8%) like post partum fever 11.8%, wound infection 4.5% and chorioamnionitis 3.6%. Also higher perinatal mortality (4.5%) and morbidity (26.4%) like respiratory distress syndrome 9.09%, birth asphyxia 4.5%, septicemia 5.8%. ***Conclusion*:** Antenatal diagnosis to prevent PROM by identifying the risk factors is an important tool in management. Steroid for fetal lung maturity, antibiotics to prevent fetal and maternal infection, induction and/or augmentation of labour in due time and skilled NICU support will speed delivery, reduce hospital stay and infection as well as decrease maternal morbidity and perinatal morbidity and mortality.

Keywords: PROM; Risk factor; Maternal outcome; Perinatal outcome.

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Introduction:

Premature rupture of membranes is defined as rupture of membranes before the onset of labour and beyond the viable age. It is called preterm PROM when it occurs before 37 completed weeks of gestation, and PROM that occur after 37 weeks of gestation defined as term PROM[1]. PROM is the leading cause of preterm births and perinatal morbidities. Prematurity and its recognized sequel like, respiratory distress syndrome, intraventricular hemorrhage, necrotizing enterocolitis are the major complications. Other fetal complications due to long standing oligohydramnios in PPROM, before 26 weeks are skeletal and craniofacial abnormalities and pulmonary hypoplasia[2,3,4]. Maternal morbidities are found interms of chorioamnionitis leading to endometritis, puerperal pyrexia, wound infection. Further morbidities can be increased obstetric interventions interm of instrumental deliveries and caesarean section due to fetal distress or in coordinated uterine action[5,6,7].Numerous risk factors are associated with PROM such as black race, lower socio-economic status, smokers, past history of STI, previous preterm delivery or abortion, polyhydramnios and multiple pregnancy. Others are procedures such as circlage, amniocentesis. The etiology is multifactorial[8,9,10]. Evidence suggests that PROM is related to membranes dysfunction on a molecular level[11], collagen dysfunction and programmed cell death in fetal membranes[12,13]. Fetal&

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maternal outcome is depend on many factors, such as gestational age, interventions (antibiotics, steroids) done, duration of labour, development of intrapartam chorioamnionitis[14]. In the absence of clinically obvious intra-amniotic infection, fetal distress or placental abruption, prolongation of pregnancy to reduce the risk of prematurity has been the main goal of conservative management in PPROM above 28 weeks[15,16]. Thus the decision to abandon expectant management of womb with PPROM in favor of delivery requires a close assessment of potential risk in those pregnancies expectantly managed vs the gestational age related risk for neonatal morbidity and mortality related intentional delivery. Even though most cases are idiopathic and unpreventable, close monitoring with timely intervention and good neonatal setup, can contribute significantly to reduce fêto maternal morbidity and mortalities. So the aim of the present study is to know the etiology, neonatal and maternal outcome of premature rupture of membranes in both term and preterm pregnancies.

Materials and Methods:

A prospective study was carried out in Ibn Sina Medical College over a period of 12 months from October 2015 to September 2016. 110 cases were included in this study. All cases of PROM/PPROM above 28 weeks of pregnancy were admitted in labour ward. Detailed antenatal history was taken including parity, period of gestation, menstrual history, risk factor if any, antenatal care and socioeconomic status. History of recent coitus, genitor-urinary infection, history of PROM/PPROM in previous pregnancy was taken. History of presenting complaints of leaking per vaginum, duration of leaking, colour of liquor was also recorded. Complete general examination to identify nutritional status (BMI), anaemia, genital hygiene, temperature, pulse rate, blood pressure, and respiratory rate were noted. Obstetric examination was done at admission to determine gestational age, presentation, liqour volume, estimated fetal size/weight and fetal heart rate. Per speculum examination was done to confirm active leaking of amniotic fluid with pooling of amniotic fluid in the vagina, leaking with valsalva. A cervical swab or high vaginal swab was taken. Other investigations done like CBC, Blood sugar, Urine R/E, CRP were done. Non Stress test was done for fetal surveillance. Ultrasound to confirm the presentation, the amniotic fluid index and gestational age. All patients admitted were started on I/V antibiotics (I/V inj. ceftriaxone 1 gm I/V12 hourly). Steroid (Betamethasone) 12 mg 12 hours apart in two doses I/M were given if gestational age was less than or equal to 34 weeks. Patients with gestational age less than 34 weeks were put on conservative management till 24 hours after the last dose of Betamethasone if no signs of chorioamnionitis were present. Pregnancy was terminated if maternal-fetal surveillance was not good. Patients were monitored with NST (32 weeks of gestation) once a day and blood counts twice in a week. Patients more than 34 weeks of gestation were induced at admission with PGE_2gel/Misoprostol (PGE_1) if Bishop's score <5 and oxytocin if Bishop's score>5. Labour monitoring done with partogram and continuous fetal monitoring. Any deviation of progress of labour, LSCS done. Maternal and neonatal outcome were studied. Fetal morbidity cases were admitted in NICU and subjected to investigations and followed till discharge. Mothers are also followed till discharge.

Inclusion Criteria:

1. Singleton pregnancy between 28-42 weeks of gestation.
2. Primi and multigravida.
3. Leaking from cervix confirmed by speculum examination

Exclusion criteria:

1. Multiple pregnancies
2. Maternal complications interfering with active management of PROM like PIH, Heart disease, previous LSCS, malpresentation, DM, IUGR, HIV infection.
3. Congenital anomalies

All records were collected in data sheet and the data were analyzed by descriptive statistics using the statistical package of social science(SPSS) version 20. The results expressed in descriptive statistics by simple percentage.

Results:

During study period, total number of deliveries in this hospital were 1620. Among them 110 Patients were included in this study based on inclusion criteria.

Table-1: Incidence of PROM according to parity, gestational age.

Variable		Number of Cases	Pereentage (n=110)
Parity	Primigravida	69	62.7%
	Multigravida	41	37.3%
Gestational age	28-36 week+6 days	32	29.09%
	>37-42 weeks	78	70.91%

Table-2: PROM with risk factors

Risk factors	Number of cases	Percentage (n=110)
Indiopathic	52	47.3%
Infection	29	26.4%
Previous history of PROM	18	16.3%
History of coitus	10	9.09%
Malpresentation	1	0.9%
Cervical surgeries & maternal disease	Nil	Nil

Table-3: Outcome with induction/augmentation in PROM

Type of Induction/ Augmentation	Number of cases	Normal vaginal delivery		LSCS	
		Number	%	Number	%
Misoprostol induction	54	34	62.95	20	37.03%
Oxytocin augmentation	56	44	78.6	12	21.4%

Table-4: Maternal morbidity in relation with PROM.

Maternal morbidity	Number of cases	Parcentage (n=110)
Puerperal pyrexia	13	11.8%
Chorioamnionitis	4	3.6%
Post partum haemorrhage (PPH)	2	1.8%
Wound infection abdominal/Episiotomy	5	4.5%

Table-5: Perinatal morbidity and mortality in relation with PROM

Risk factors	Number of cases	Parcentage (n=110)
Birth asphyxia	5	4.5%
Respiratory distress syndrome	10	9.09%
Septicemia	7	5.8%
Seizure	2	1.6%
Jaundice	3	2.5%
Transient Tachypnoea in newborn	2	1.6%
Fetal death	5	4.5%

Discussion:

There are many studies which cover different aspects of feto-maternal outcome in PROM cases[4,8,9,10]. This study supports proper antenatal care, early detection and prevention of obstetric complications can improved the feto-maternal outcome. In this study 62.7% cases with PROM were primigravida. According to Akhter et al[17] chance of increase sexual activity and increased genital infection are the most common among primigravida. In this study primigravida were 53%. Gestational age in majority of the study subject were >36 weeks in the current study. Adeniji AO, Atanda OA and Biswas T etal also revealed similar type of findings in relation of gestational age[18,19]. Incidence of preterm PROM in this study was 29.09%.Dan forth[20] shows similar findings 30% incidence of preterm PROM. Although it is widely agreed that PROM is multifactorial, finding from this study shows that mostly the causes are idiopathic(47.3%) but can be associated with genital tract infection (26.4%), previous history of PROM (16.3%), coitus (9.09%), malpresentation (0.9%). No causes of cervical surgeries,connective tissue disorder was seen. In Shehla Noor[21] study previous history of PROM was in 30.6% cases and Devi Anjena[22] showed that 40% in PROM group had history of coitus 2 weeks before delivery. Genital tract culture positive was found in 22% of cases. Out of which E.Coli was the most common organism. Habeebullah and Baswaraj[23] also in their study found E.Coli as the most common organism isolated from genital tract. Vaginal delivery was the commonest mode of delivery. There was a fourfold increase in the caesarean section rate, the rate of LSCS being 29.09% in present study comparable to 27% in Sita Ram Shrestha et al[24] and 30% in kod kaney telang et al study[7]. In misoprostol induced group 62.95% had vaginal delivery and 37.03% undergone caesarean section for failed induction. In oxytocin augmentation group 78.6% delivered vaginally, and 21.4% undergone caesarean section. Maternal mortality was not seen in this study. Maternal morbidity rate 24 cases (21.8%) are higher compared to study by vermillion et al[25] but is an agreement with that reported by Yoon et al[26], by Egarter et al[27] and Davidson[28]. Use of prophylactic antibiotic in PROM reduced maternal morbidity. However despite the fact that the prophylactic antibiotic was used liberally in this study. Maternal morbidity rate 21.8% and perinatal mortality rate 4.5% were reported. 11.8% patients had puerperal fever and 3.6% chorioamnionitis. In Artal K study[29] puerperal

pyrexia 13% and chorioamnionitis 3-13%.Harding et al demonstrated that use of corticosteroid in preterm PROM before 34 weeks gestational age reduces perinatal morbidity and mortality by reducing the risk of respiratory distress syndrome, intraventricular haemorrhage and necrotizing enterocolitis[30]. In this study steroid was used in all cases of PPROM below 34 weeks and this may be responsible for low incidence of RDS, IVH and necrotizing enterocolitis observed. Among 110 cases 9.09% babies suffered from respiratory distress syndrome, 5.8% from septicemia, 2.5% from neonatal jaundice, 4.5% from birth asphyxia, 1.6% seizure, 1.6% transient tachypnoea.S.Akhter et al[31] study shows similar findingsRDS 11.1% and septicemia 6.7%. Perinatal mortality4.5% which correlate with the study of Boskadi et al[32] was 4.6%, and Tavasseli et al[33] was 8.8%,the most common causes being septicemia, RDS and Birth asphyxia.

Conclusion:

PROM is a high risk obstetric condition which is a common problem among pregnant women and a big challenge to the Obstetricians and also for Neonatologists. Evaluation of risk of PROM and timely diagnosis is essential to reduce maternal and perinatal morbidity and mortality. Antibiotic and steroid (incases of PPROM <34weeks) administration to women with PROM significantly reduces maternal and neonatal morbidity. Active management is needed to enable delivery within 24 hours of PROM and it offers better maternal and neonatal outcome. The main objective of the Obstetrician should be early searching, adequate antenatal visits and improvement of general condition of the mother, identifying risk factors, treating associated complication, correct diagnosis of PROM and induction of delivery (>34 weeks) that gives a high rate of successful vaginal deliveries without a rise in neonatal and maternal morbidities. Neonatal complications may be related more closely to the effects of premature birth and sophistication of Newborn special care unit (NBSCU) rather than PROM.

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