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Original Research Article

Study of maternal and perinatal outcome in case of premature rupture of membrane at term

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ABSTRACT

Background: Premature rupture of membranes is characterized by the rupture of membranes before the onset of true labour. PROM is associated with a high risk of maternal morbidity and also perinatal morbidity and mortality. The objective of this study was the evaluation of various risk factors and maternal and perinatal outcomes for a better understanding of this oracular condition for its better understanding and timely management.

Methods: This study was carried out on 75 cases of PROM fulfilling set criteria over one year at a tertiary care hospital of western India. Demographic details, risk factors and outcomes were studied.

Results: Present study found the highest number of cases among the age group 21-24 years. 70% of patients were primigravida and almost 75% were un-booked. Around 2/3rd of cases were delivered vaginally, having the highest number of maternal and perinatal morbidity and mortality when the duration of PROM increased to more than 24 hours.

Conclusions: In our study, it was seen that PROM is more commonly seen in younger primigravida having certain risk factors. Many delivered vaginally. Complications increased with increasing duration of PROM. Early recognition of premature rupture of membranes and their associated complications and appropriate management of the situation helps in reducing the problems due to PROM to a great extent.

Keywords: Maternal and perinatal outcome, Premature rupture of membrane, Primigravida, Vaginal delivery

INTRODUCTION

Premature rupture of membranes (PROM) is characterized by the rupture of membranes before the onset of true labour. If the rupture occurs before 37 completed weeks of gestation it is called preterm premature rupture of membranes (PPROM). If the rupture occurs after 37 completed weeks of gestation it is called premature rupture of membranes (term PROM).^{1,2}

PROM occurs in approximately 5%–10% of all pregnancies, of which approximately 80% occur at term.³ In term PROM, labour starts spontaneously within 12 hours in 50% of cases, within 24 hours in 70% cases, within 48 hours in 85% cases, and within 72 hours in 95% of cases.⁴ 4.4 fold increase in the incidence of PROM was

found in women having third trimester routine pelvic examination in a study by Jiwane.⁵ 6 fold increase in PROM cases were seen in patients having sexual intercourse in the last trimester in a study by Kodkany and Telang.⁶

Complications associated with term PROM are ascending infection, in utero cord compression/cord prolapse, increased rates of cesarean section, and postpartum haemorrhage.⁷⁻⁹ PROM is the common cause of preterm labour and causes 10% of perinatal deaths.

It seems that premature rupture of membranes is an oracular condition which is poorly defined with an obscure etiology and is associated with a high risk of maternal and perinatal morbidity and mortality.¹⁰

So, the present study was conducted to evaluate the maternal and perinatal outcomes in premature rupture of membranes at term.

METHODS

A prospective study was carried out on 75 cases of PROM fulfilling the below-mentioned criteria over one year at a tertiary care hospital of western India. The patients were selected randomly with their informed consent.

Inclusion criteria

Gestational age >37 completed weeks confirmed by LMP or USG; cervical dilatation <3 cm; no uterine contractions for at least 1 hour after PROM; single live pregnancy with vertex presentation; confirmed cases of PROM.

Exclusion criteria

Gestational age <37 completed weeks; cervical dilatation >3 cm; women in labour or with uterine contraction within one hour of rupture of membrane; previous cesarean section; malpresentation, multiple gestation and conditions like contracted pelvis.

Diagnosis of PROM by confirmation of leaking

Detailed history of time of onset of leaking, amount of fluid loss, its colour, smell, association with bleeding per vaginum, or pain. Clinical examination showing leaking from cervical os. Ultrasonography shows oligohydramnios (single vertical pocket <5 cm). In case of doubt, following methods were used to confirm the diagnosis- nitrazine test- nitrazine paper detects amniotic fluid by its pH (pH of amniotic fluid being 7.0 to 7.3). Fern test - fluid from the post vaginal fornix is swabbed onto a glass slide and allowed to dry for 10 minutes. Amniotic fluid when seen under the microscope shows a delicate ferning pattern.

The patients having PROM were selected by above-mentioned methods and these patients were admitted to the hospital. Duration from PROM to admission noted. Routine investigations done. Patients were observed for 6 hours for spontaneous labour to start. If after 6 hours, labour didn't start, induction was done depending on the Bishop's score with either tablet Misoprostol or Dinoprostone gel.^{11,12} Maternal and fetal conditions observed throughout the time. Patients were reassessed after 12 hours of leaking. Depending on the Bishop's score; reinduction was done. In patients not showing progress even after induction or deteriorating maternal or fetal condition at any time, cesarean section was done.

RESULTS

According to the present study, PROM was seen more in patients who were younger (72% cases in 21-25 years of age), primi (around 70% cases) and were unbooked

(around 75% cases) for the antenatal care in the hospital (Table 1).

Idiopathic PROM, anemia, UTI, and lower genital tract infection were seen to be some of the leading causes of PROM according to the present study (Table 2).

Table 1: Demographic distribution in the study.

Demographic details	Number of patients (n=75)	Percentage
Distribution by age (years)		
18-20	8	10.6
21-25	54	72
26-30	10	9.3
31-35	2	2.6
>35	1	1.3
Distribution by parity		
Primi	52	69.3
Multi	23	30.6
Antenatal booking		
Registered	19	25.3
Unregistered	56	74.6

Table 2: Risk factors for PROM.

Risk factors	Number of cases (n=75)	Percentage
Anemia	16	21
Urinary tract infection (UTI)	10	13
Lower genital infection	9	12
Polyhydramnios	6	8
Cervical stitch	4	5
No any risk factor	30	40

Time between PROM to admission

With increase in the duration of PROM, maternal and fetal complications also increase. In the present study the maximum duration of PROM to admission was 72 hours and the minimum being 2 hours, so; the mean duration was 9.6 hours.

Around 2/3rd of cases presenting with PROM were delivered vaginally leaving around 1/3rd of cases being delivered by cesarean section and only 3% cases delivered instrumentally. The results were comparable with the Bhupesh study.¹³

Maternal indications for cesarean section were cephalopelvic disproportion, obstructed labour, poor bishop's score even after adequate induction, associated medical condition requiring cesarean section etc. Fetal indications for cesarean section were fetal distress, intrauterine growth retardation etc.

Table 3: Mode of delivery in cases of PROM.

Mode of delivery		Number of cases (n=75)	Percentage	
			Present study	Bhupesh et al ¹³
Vaginal delivery	Spontaneous labour	16	21%	66%
	Induced cases	34	45%	
Cesarean delivery	Maternal indications	16	21%	30%
	Fetal indications	7	9%	
Instrumental delivery		2	3%	4%

Table 4: Maternal morbidity and perinatal morbidity and mortality in cases of PROM.

Duration of PROM	Total number of cases (n=75)	Maternal morbidity cases	Percentage present study	Percentage Jalli study ¹⁴
<12 hours	-	1	1	1.3
12-24 hours	-	5	7	6.7
>24 hours	-	18	24	26.7
Duration of PROM	Number of cases	Perinatal morbidity cases	Present study	Jalli study ¹⁴
<12 hours	10	1	10	10
12-24 hours	38	9	24	30
>24 hours	22	7	32	25
Duration of PROM	Number of cases	Perinatal mortality cases	Present study	Jalli study ¹⁴
<12 hours	10	0	0	0
12-24 hours	22	1	4	5
>24 hours	38	1	3	5

The present study showed that in 24% of cases; maternal morbidity was seen in patients having PROM for >24 hours. 32% and 3% of cases showed perinatal morbidity and mortality respectively.

Maternal morbidity was seen in terms of chorioamnionitis, septicemia, increased rate of cesarean section etc. and perinatal morbidity and mortality were seen to be due to fetal asphyxia, neonatal sepsis, long-term neurodevelopmental abnormalities etc.

DISCUSSION

PROM is an enigmatic condition associated with both maternal and fetal complications. Complication increases with decrease in gestational age and increase in latent period.¹³ According to Jalli et al study, the occurrence of PROM was statistically significant in the age group of 21-25 years and the leading risk factor for PROM was anemia and UTI, the second-highest.¹⁴ In the present study, maximum PROM cases occurred in the age group of 21-25, 63% of patients were primigravida and 74.6% of cases were unbooked. In the present study, risk factors were also comparable to the Jalli study.

In the study done by Devi et al, the duration of PROM was between 3 hours to 5 days, the mean duration being 16 hours.¹⁵ Results are comparable to this study.

According to the study by Bhupesh et al rate of normal delivery was nearly double the rate of LSCS and 4% of

patients had instrumental delivery.¹³ In the present study also vaginal delivery (68%) was the preferred method of delivery over LSCS (32%), instrumental delivery was done only in 3% cases.

In comparison to the maternal and perinatal morbidity and mortality in the study by Jalli et al, the present study showed that maternal and perinatal morbidity and mortality increased when the point of PROM to delivery duration was more than 24 hours.¹⁴ Predictors of neonatal morbidity/mortality should be identified like clinical chorioamnionitis, mother positive for group B streptococcal status, digital vaginal examinations more than 7-8, PROM for more time before active labour etc.¹⁶

CONCLUSION

PROM is associated with a high risk of maternal morbidity, perinatal morbidity and mortality. It complicates 5-10% of all pregnancies. Birth asphyxia was the most common cause of perinatal morbidity. Puerperal sepsis was the most common cause of maternal morbidity and mortality. Complications increase with a decrease in gestational age and increase in the latent period. Women should be educated about the possibility of PROM and the need to report at the earliest. Anemia and UTI should be diagnosed timely and treated. Early recognition of premature rupture of membranes and their associated complications and appropriate management of the situation helps in reducing the problems caused by PROM to a great extent. Institution-based management with a

combined effort of obstetricians and neonatologists is necessary.

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