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Original Research Article

Maternal outcome in term premature rupture of membranes

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ABSTRACT

Background: Rupture of Fetal membranes before the onset of labour is called PROM. Premature rupture of membrane (PROM) is associated with various complications. The present study is undertaken to study the maternal morbidity in term PROM.

Methods: A prospective cross-sectional study was conducted at Vijaynagar institute of medical science Ballari for a period of one year by Department of Obstetrics and Gynecology from November 2016 to October 2017. 120 cases of spontaneous rupture of membranes with term gestation with confirmed PROM were selected.

Results: PROM was common in age group of 20-29 years (80%), and common in primigravida. Study showed majority of them belongs to low socioeconomic status (80%), 13.33% belonged to middle socioeconomic status and 6.66% belonged to higher socioeconomic status. In present study, it is observed that 27.05% cases went into spontaneous labour and delivered normally, 56.50% cases delivered by induction and 20% cases were delivered by LSCS. The rate of maternal morbidity was 16.6%, which includes febrile morbidity accounting to maximum with 9.6% followed by wound infection 3.33% and others were PPH(1.66%) and puerperal sepsis (each 1.66%).

Conclusions: The rate of maternal morbidity was 16.6% and no maternal death observed. Hence an appropriate and accurate diagnosis of PROM is essential for favorable outcome in pregnancy and reduces the maternal morbidity.

Keywords: LSCS, Maternal morbidity, Premature rupture of membrane

INTRODUCTION

Membranes rupture usually occurs during active phase of normal labour. Early rupture of membranes contributing to significant maternal and perinatal morbidity. However, the risk is more with multiple factors like duration of pregnancy and time of rupture of membranes.¹

The management of premature rupture of membranes has gone through various cycles of obstetric activity from neglect to immediate intervention. Paralleling these cycles of activity there have been varying degrees of concern about infection. According to some studies incidence of premature rupture of membranes is around 5-10%.² The time from the rupture of membranes to the onset of contraction is defined as the latent period. The

key factor in the fetal and maternal outcome is that the diagnosis of pre-labour rupture of membranes must be established. In most instances either it is obvious from the escape of clear amniotic fluid from cervix or by simple laboratory test like detection of fern pattern/Litmus paper test.

The key to the management is an accurate assessment of gestational age and the presence or absence of chorioamnionitis. Complications such as intra-amniotic infection occurs in 13%-60% of women with PROM, placental abruption, and postpartum endometritis.^{3,4} Patients with PROM are more prone to ascending infection, longer the time duration between rupture of membranes and onset of labour, more will be the risk of ascending infection and acquiring chorioamnionitis.⁵

Chorioamnionitis, dysfunctional labour, increased cesarean rates, postpartum hemorrhage and endometritis increases with PROM. Management is not clear, the main uncertainty relating to induction of labour or expectant care.

Three decades ago the main worry of premature rupture of the membranes was intra uterine infection and this led the wide spread absorption of a policy of induction of delivery to prevent such infection.

This view has challenged by an apparent increase in the number of caesarean section in woman with premature rupture of the membranes who had their labour induced. Hence PROM is an obstetric condition associated with significant maternal morbidity and mortality.⁶ Hence the present study was conducted to analyze the maternal outcomes in premature rupture of membranes at term.

METHODS

A prospective cross-sectional study was conducted at Vijaynagar institute of medical sciences, Ballari for a period of 1 year by Department of Obstetrics and Gynecology from November 2016 to October 2017.

All patients attending the outpatient department and causality with history of leak PV were admitted and were enrolled as cases in the study. All cases were examined in detail and confirmed by per speculum examination and ultrasonography.

A detailed history of leak per vagina, menstrual and obstetric history obtained by questioning and detailed clinical obstetric examination was done.

Condition of vagina and cervix was noted by speculum examination. Cervical swab was taken and sent for gram stain and culture and sensitivity.

Inclusion criteria

- Singleton pregnancy more than 37 weeks of gestation.
- Includes both Primi and multi gravida.
- Age group 18-40 years.
- Leaking from cervix confirmed by speculum examination.
- Cervix dilatation less than 3cm.
- Lack of uterine contractions.

Exclusion criteria

- Multiple pregnancies.
- Maternal complications interfering with active management of PROM like PIH, heart disease, previous LSCS, GDM.
- Immunocompromised cases including HIV, HBsAg positive cases.

RESULTS

The age group range in the study was 18-40 years, according to the incidence of age in PROM the most common age group in the study was 20-29 years (81.66%) followed in order by age less than 20(12.5%) and 30-40 years (5.83%) (Table 1).

Table 1: Age incidence in PROM.

Age in years	No. of cases	Percentage
<20	15	12.5
20-29	98	81.66
30-40	7	5.83
Total	120	100

Study showed majority of them belong to low socioeconomic status (80%), 13.33% were belonging to middle socioeconomic status and 6.66% were belonging to higher socioeconomic status (Table 2).

Table 2: Socio-economic status in PROM.

SE class	No. of cases	Percentage
Low (IV and V)	96	80
Middle (III)	16	13.33
High	8	6.66
Total	120	100

Out of 120 cases 49 were booked (40.82%), and 71cases (59.16%) were not booked. This does not have any impact on antenatal care and incidence of PROM in the study result (Table 3).

Table 3: Antenatal care and PROM.

An. booking	No. of cases	Percentage
Booked	49	40.83
Unbooked	71	59.16
Total	120	100

According to the parity incidence 71.16% of cases were primigravidas, 19.16% were 2nd gravida, 5.83% were 3rd gravida and 3.33% of cases were 4th gravida (Table 4).

Table 4: Parity incidence in PROM.

Parity	No. of cases	Percentage
G1	86	71.16
G2	23	19.16
G3	07	5.83
G4	04	3.33

In 71 cases (59.16%) cause was unknown, whereas 19 cases (15.83%) showed it was due to infections, history of coitus was in 22 cases (18.33%) and mal presentation in 8 cases (6.66%) (Table 5). Out of 120 cases, 19 cases (15.83%) has positive cervical swab culture.

Table 5: Aetiological Analysis in PROM.

Cause	No. of positive cases	Percentage
Infection	19	15.83
H/O coitus	22	18.33
Mal-presentation	8	6.66
H/O cervical surgery	0	0
Not known	71	59.16
Total	120	100

No bacterial growth was observed in 101 cases (84%) in the study and the predominant isolate from the cervical swab was *Escherichia coli* 10 cases which accounts to 52.63% of 19 cases followed in order by Streptococci in 3 cases (15.78%), *Klebsiella pneumonia* in 3 cases (15.78%), *Proteus* in 2 cases (10.52%) and *Pseudomonas aeruginosa* in 1 case (5.26%) (Table 6).

Table 6: Bacteriological study of amniotic fluid in PROM.

Organism grown	No. of cases	Percentage
<i>E. coli</i>	10	52.63
Streptococci	3	15.78
<i>Klebsiella</i>	3	15.78
<i>Proteus</i>	2	10.52
<i>Pseudomonas aeruginosa</i>	1	5.26
Total	19	100

In present study, it is observed that 33 cases (27.05%) had gone for spontaneous labour and delivered normally, 63 cases (56.50%) delivered by induction of labour and 24 cases (20%) were delivered by LSCS (Table 7).

Table 7: Mode of delivery.

Mode of delivery	No. of cases	Percentage
Spontaneous labour	33	27.5
Induction labour	63	52.50
LSCS	24	20
Total	120	100

The rate of maternal morbidity was 16.6% of which febrile morbidity accounting to maximum with 11 cases (9.6%) followed by wound infection in 4 cases (3.33%) and others were PPH and puerperal sepsis 2 cases each (1.66% each) and clinical chorioamnionitis in 1 case (0.83%) (Table 8).

Table 8: Maternal morbidity in PROM.

Morbidity	No. of cases	Percentage
Febrile morbidity	11	9.16
Clinical choriomnitis	1	0.83
PPH	2	1.66
Wound Infection	4	3.33
Puerperal sepsis	2	1.66

DISCUSSION

PROM is a common complication of pregnancy which leads to increased maternal complications, operative procedures, maternal mortality and morbidity. In present study the commonest age group was 20-29 years (85%) which correlates with the findings in the study of Kodkany BS et al and Devi A et al.^{7,8} PROM is more common in unbooked cases rather than booked cases and which is similar to findings in many studies all over the world.⁹

It is observed in present study that PROM was high in cases of low socioeconomic status (80%) which might be due to many reasons like, poor nutritional status, anemia, and increased genitourinary infections due to poor personal hygiene, all these causes increased risk of PROM. Many studies reported low socioeconomic status associated with PROM.¹⁰

Study showed normal delivery is the commonest mode of delivery and the result is 80%, which is similar to V Kamala et al study.¹¹ LSCS rate in study group is 20%, which is similar to Sita Ram Shreshta et al study.¹² Ray P et al and Jayaram VK et al who reported an incidence of 31.5% of LSCS in their studies.^{11,13} In comparison to above mentioned 2 studies, rate of vaginal delivery was more in present study. This could be due to active management of labour, timely induction and augmentation, strict monitoring of fetal heart rate and judicious use of oxytocics, and instruments during delivery. In a study by Kshama Vishwakarma, Vaginal delivery was the commonest mode. Out of 347, 218 (62.8%) women delivered vaginally, rest of women had caesarean section (37.2%).¹⁴

Amniotic fluid culture is valuable for identifying the bacteria causing infection and their antibiotic sensitivity. The amniotic cavity generally is sterile. The term microbial invasion of the amniotic cavity refers to the presence of a positive amniotic fluid for microorganism's cultures, regardless of the presence or absence of clinical signs or symptoms of infection.

But 15.83% of patients in study group showed positivity in amniotic fluid culture and the predominant isolate from the cervical swab was *Escherichia coli*. In present study, the maternal mortality was nil, which was lower than that of (0.26%) reported from Gujarat, India.¹⁵

The rate of maternal morbidity was 16.6% of which febrile morbidity accounting to maximum with 9.6% followed by wound infection 3.33% and others were PPH (1.66%) and puerperal sepsis (each 1.66%). In a similar study by Kshama Vishwakarma, there was some or other type of maternal morbidity in 14.9% cases (52 women in 347); 6.3% patients had wound infection, around 3% patients developed fever and abdominal distension, whereas 2.1% patients had symptoms of chorioamnionitis.¹⁴ In a study by Kadikar GK, Gandhi

MR wound infection accounted for 03%, maternal pyrexia accounted for 02%, and UTI for 03% of cases. Chorioamnionitis was rare complication affecting only 1% of cases.¹⁶

CONCLUSION

The study shows majority of PROM patients were in age group of 20-29 years. There is significant correlation found between age group 20-29 and occurrence of PROM. The incidence of PROM was more in primigravida (71.6%) than multigravida (28.33%). Hence PROM is common in primigravida. Out of 120 cases 49 were booked (40.82%), and only 71 cases (59.16%) were not booked. This does not have any impact on antenatal care and incidence of PROM in the study result. The rate of maternal morbidity was 16.6% and no maternal death was observed. Hence an appropriate and accurate diagnosis of PROM is essential for favorable outcome in pregnancy and thus it decreases the maternal morbidity.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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