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STUDY OF FETOMATERNAL OUTCOME IN PREMATURE RUPTURE OF MEMBRANES

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ABSTRACT

Introduction: Premature rupture of membranes refers to rupture of membranes prior to the onset of labour, occurring in 3% of pregnancies and causing around 25-30% of all preterm deliveries. PROM patients are at a risk of the ascent of pathogenic microorganism from the lower genital tract leading to complications such as intrauterine infections and perinatal morbidity and mortality, including respiratory distress syndrome, neonatal sepsis, umbilical cord prolapse, placental abruption, and IUFD. With the advent of antibiotics and foetal and maternal monitoring, perinatal and maternal complications of PROM can be prevented.

Methods: This is retrospective observational study conducted in an Unit of OBGYN Department in a tertiary hospital, Mumbai, from March to August 2017 in patients diagnosed as PROM (>28week gestation). Total number of such patients was 60. Diagnosis was confirmed and results were analysed.

Results: Out of 60 cases, 21.7% were unbooked. Maximum cases were in the age group of 20-25 years(55%). Most cases presented at 37-40 weeks gestation(68.3%)and were primigravida (51.7%). 18.3% cases were of preterm PROM. 73.3% patients delivered vaginally. 18.3% cases were delivered by LSCS without trial of labour, the commonest indication of which was malpresentation(36.2%). 68.3% cases had a third trimester USG s/o AFI >10cm. 10% had a third trimester USG s/o AFI < 5 cm (Lowest AFI = 1cm).Of these, 4 delivered by LSCS without trial of labour(commonest indication: sev Oligo/IUGR) and 2 delivered vaginally. 8.3% cases delivered by LSCS after being given a trial of labour. The commonest indication of LSCS after trial of labour was fetal distress(60%). Majority of the babies had a birth weight ranging from 2.5-3kg (50%). Out of 60, 16 neonates required NICU admission(26.7%), commonest indication being Respiratory distress (7 out of 16 cases). 5 out of 16 NICU admissions were for Low birth weight(<1.8 Kg). Maternal complications seen were fever(10%), wound gape(3.33%) and anemia, requiring blood transfusion (3.33%).

Conclusion: PROM is associated with poor fetomaternal outcome which can be prevented by early diagnosis and prompt management.

KEYWORDS : PROM, Respiratory distress, Oligohydramnios, maternal fever, preterm labour, LBW,

Introduction

Premature rupture of membranes (PROM) refers to a patient who is beyond 37 weeks' gestation and has presented with rupture of membranes (ROM) prior to the onset of labour. It occurs in 3% of pregnancies and causes around 25-30% of all preterm deliveries. [1-3]

Patient with PROM presents with leakage of fluid, vaginal discharge and pelvic pressure, but they are not having contraction. During the latency period, the ascent of pathogenic microorganisms from the lower genital area could create complications such as intrauterine infections.[4-8]

Since PROM is associated with lower latency from membrane rupture until delivery, it is an important cause of perinatal morbidity and mortality, including respiratory distress syndrome, neonatal sepsis, umbilical cord prolapse, placental abruption, and foetal death [1-3]

At term, programmed cell death and activation of catabolic enzymes, such as collagenase and mechanical forces, result in ruptured membranes. Preterm PROM occurs probably due to the same mechanisms and premature activation of these pathways. However, early PROM also appears to be linked to underlying pathologic processes, most likely due to inflammation and/or infection of the membranes. Clinical factors associated with preterm PROM include low socioeconomic status, low body mass index, tobacco use, preterm labor history, urinary tract infection, vaginal bleeding at any time in pregnancy, circlage, and amniocentesis.

Most patients (90%) enter spontaneous labour within 24 hours when they experience ROM at term. Eighty-five percent of neonatal morbidity and mortality is a result of prematurity. PPROM is associated with 30-40% of preterm deliveries and is the leading identifiable cause of preterm delivery. The major question regarding management of these patients is whether to allow them to enter labor spontaneously or to induce labor. In large part, the management of these patients depends on their desires; however, the major maternal risk at this gestational age is intrauterine infection. The risk of intrauterine infection increases with the duration of ROM. Evidence supports the idea that induction of labor, as opposed to expectant management, decreases the risk of chorioamnionitis without increasing the cesarean delivery rate.[13-15]

It has been demonstrated that as many as 25-30% of women with PPROM have a higher incidence of positive amniotic fluid culture obtained by amniocentesis even when there is no clinical doubt for chorioamnionitis. The risk of intrauterine infection increases with the duration of ROM. [1,9]

PROM causes definite maternal and neonatal morbidity and mortality; therefore, the attending physicians should be considerably aware of the risk factors and should be able to judge appropriately whether to terminate the pregnancy or to continue with the pregnancy.

Expectant management with antenatal antibiotic and corticosteroid administration are the recommended standard of care in the setting of Preterm PROM at gestational age of ≤34 weeks.[1]

In terms of the bactericidal property of amniotic fluid, and its protective role against infections, it seems that a decrease in the volume of amniotic fluid after PROM increases the patient's suscpetibility to infection, therefore, the risk of infection is increased. This hypothesis was first evaluated by Vintzileos et al. in 1985.[10] They reported the relationship between oligohydroamnios (AFI<5), increased infection and perinatal mortality.

Mercer et al in 2006 which showed that there was no relationship between chorioamnionitis and oligohydroamnios.[11]

Piazze et al. in 2007 did not find any correlation between the two groups although 66% of cases exhibited chorioamnionitis at AFI<5,

however, they reported a significant relationship between higher maternal WBC and fever (temperature >38°c) with oligohydroamnios.[12]

Methods

This is retrospective observational study conducted in an Unit the Department of Obstetrics and Gynecology in Cama and Albless Hospital, Mumbai, from March to August 2017 among the patients diagnosed as premature rupture of membrane attending antenatal OPD, casualty and admitted in antenatal ward. Total number of patients found to have PROM (i.e >28week gestation) was 60. On admission detailed history was taken. General and Systemic examination were done including Per Abdomen, Per Speculum and per vaginum carried out and investigations were done as per protocol. Diagnosis of PROM was confirmed by any of this method. Continuous monitoring of maternal and fetal condition done, antibiotics was given intra/ post natal period. P/ V exam were done when necessary. Investigations done and maternal and fetal outcome were noted.

Inclusion criteria

All confirmed cases of PROM - more than 28 week

Exclusion criteria

Bleeding p/v, intact membrane. Less than 28 weeks of gestational age

On admission detailed history was taken, in whom LMP not known gestational age confirmed by USG. Menstrual and obstetric, personal, past and family history were taken. General and Systemic examination were done including Per Abdomen, Per Speculum and per vaginum carried out and investigations were done as per protocol. Diagnosis of PROM was confirmed by any of this method. Leaking was demonstrated by P/S examination. On admission P/V done and Bishop's Scoring done and correlated with duration of PROM to decide management like induction. Continuous monitoring of maternal and fetal condition done, antibiotics was given intra/ post natal period. P/ V exam were done when necessary. Cases and controls were followed as per protocol. Investigations done and maternal and fetal outcome were noted.

Results

Table1: Distribution of cases according to booking status

Booking Status	Number	Percentage
Booked	47	78.3%
Unbooked	13	21.7%
Total	60	100%

Out of 60 cases, 21.7% were unbooked.

Table 2: Distribution by age in years

Age group in yrs	Number	Percentage
<20	2	3.3%
20-25	33	55%
25-30	16	26.7%
>/= 30	9	15%
Total	60	100%

Maximum cases were in the age group of 20-25 years(55%).

Table 3: Distribution by parity

Parity	Number	Percentage
1	31	51.7%
2	20	33.3%
3	6	10%
4	2	3.3%
5	1	1.7%
Total	60	100%

51.7% cases were primigravida

Table 4: Distribution by mode of delivery

Mode of delivery	Number	Percentage
Vaginal Delivery	44	73.3%
LSCS	16	26.7%
Total	60	100%

73.3% cases delivered vaginally, whereas 26.7% cases were delivered by LSCS.

Table 5: Indication for LSCS without trial of labour

Indication	Number	Percentage
Malpresentation	4	36.2%
Scar tenderness	3	27.3%
Severe oligo (AFI<3)	2	18.2%
Thick MSAF	2	18.3%
Total	11	100%

11 out of 16 cases were delivered by LSCS without Trial of labour.
The most common indication for LSCS without trial of labour was malpresentation (36.2%)

Table 6: Indication for LSCS after trial of labour

Indication	Number	Percentage
Foetal distress	3	60%
Thick MSAF	1	20%
Second stage arrest	1	20%
Total	5	100%

5 out of 16 cases were delivered by LSCS after a trial of labour with/without Induction of labour.

The commonest indication for LSCS after trial of labour was Foetal distress, in 60% of cases.

Table 7: Distribution by gestational age

Gestational age in weeks	Number	Percentage
28-32	4	6.7%
32-37	7	11.7%
37-40	41	68.3%
>/= 40	8	13.3%
Total	60	100%

Most of these cases presented at a gestational age ranging from 37-40 weeks (68.3%)

Table 8: Distribution by time interval between PROM and delivery of foetus

Duration in hours	Number	Percentage
<6	1	1.7%
6-12	18	30%
12-18	35	58.3%
18-24	5	8.3%
>/= 24	1	1.7%

Majority of cases delivered within 18 hours of PROM.
58.3% cases delivered between 12-18hrs of PROM

Table 9: Distribution according to AFI in 3rd trimester USG (latest)

AFI	Number	Percentage
<5	6	10%
5-10	14	23.33%
>/=10	40	66.7%
Total	60	100%

66.7% cases had a 3rd trimester scan with AFI >/=10 cm
6 cases(10%) had AFI< 5 cm. (Lowest AFI = 1cm).
Of these, 4 were delivered by LSCS without trial of labour,

commonest indication being severe Oligohydramnios/IUGR. 2 delivered vaginally.

Table 10: Distribution by birth weight

Birth weight in Kg	Number	Percentage
<2	7	11.7%
2-2.5	6	10%
2.5-3	30	50%
>/= 3	17	28.3%
Total	60	100%

50% cases delivered babies with birth weight ranging from 2.5-3 kg

Table 11: Maternal complications

Complications	Number	Percentage
Fever	6	10%
Wound gape	2	3.33%
Others	2	3.33%
Total	10 out of 60	

Maternal complications seen were fever(10%), wound gape(3.33%) and anemia, requiring blood transfusion (3.33%). This may be because PROM required intervention in the form of Induction of labour or LSCS, leading to blood loss and anemia.

All the cases with fever had a leak of >/= 10 hours.

Table 12: Causes for NICU admissions

Causes	Number	Percentage
LBW	5	31.25%
Prolonged PROM (>18hrs)	4	25%
RD	7	43.75%
Total	16	100%

Out of 60, 16 neonates required NICU admission(26.7%), commonest indication being Respiratory distress (7 out of 16 cases).

Discussion

There are many studies which cover different aspects of fetomaternal outcome in PROM cases. In our study, Out of 60 cases, 78.3% cases were booked. Whenever the patient is booked in any institution, then the patient is being monitored and most of complication may be detected earlier either by taking history or examination then proper care of the patient can be taken regarding the complication.

In our study, majority of pts were in the age group of 20-25 yrs (55%) and mean age of presentation was 24.57. Studies by Lieman JM et al and Chaudhuri S et al showed that mean maternal age of presentation was 24.7 yrs. [15-16]

Gestational age in majority of the cases were >36week in the current study. Adeniji AO, Atanda OA and Biswas T et al also revealed nearly similar type of findings in relation to gestational age.[17,18]

Rate of Vaginal delivery and caesarean section was 73.3% and 26.7%. Rate of LSCS were range from 8.3 to 56% whereas rate of Spontaneous Vaginal delivery 42.3 to 88% in many previous studies.[18-20]

Maternal complications seen were fever(10%), wound gape(3.33%) and anemia, requiring blood transfusion (3.33%). Many studies also revealed higher chances of maternal complication with PROM cases.[21-23]

Conclusion

From the above study, it can be concluded that PROM can be associated with poor fetomaternal outcome. Early diagnosis and prompt management is required for better outcome of mother and baby. ANC cases should be educated regarding regular and timely antenatal check up. At earlier stages of gestation, conservative management with careful surveillance for infection and fetal distress is a rational approach to the problem, to achieve further in utero fetal maturation. The obstetrician and neonatologist should work as a team to ensure optimal care for mother and fetus.

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