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Original Research Article

A study on feto-maternal outcome in patients with premature rupture of membranes

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ABSTRACT

Background: 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 labor. Patient with PROM presents with leakage of fluid, vaginal discharge and pelvic pressure, but they are not having contraction. It occurs in 3 percent of pregnancies and is the cause of approximately one third of preterm deliveries. It can lead to significant perinatal morbidity, including respiratory distress syndrome, neonatal sepsis, umbilical cord prolapse, placental abruption, and fetal death. Appropriate evaluation and management are important for improving neonatal outcomes. 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.

Methods: The present prospective study was conducted in the Department of Obstetrics and Gynecology and associated Dr. B.R.A.M. Hospital Raipur (C.G.), India from January to December 2013 among the patients diagnosed as premature rupture of membrane with women complain of leaking attending antenatal OPD and antenatal ward. 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.

Results: More number of unbooked cases was found in study group in comparison to control group. Maximum women were in the age group of 20-25 years. Majority of cases in both the groups had pregnancy more than 36 weeks. PROM results in oligohydramnios due to drainage of liquor amnii. Majorities of the babies were underweight among mothers with PROM. Thus the better fetal outcome was associated with term gestational age. Higher chances of maternal complication were found among mothers with PROM.

Conclusions: From the above study, it can be concluded that PROM is associated with poor fetomaternal outcome. Early diagnosis and prompt management is required for better outcome of mother and baby.

Keywords: Fetomaternal Outcome, Morbidity, PROM, Pregnancy

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 labor. Preterm premature rupture of membranes (PPROM) is ROM prior to 37 weeks' gestation. Spontaneous premature rupture of the membranes (SPROM) is ROM after or with the onset of labor. Prolonged ROM is any ROM that persists for more than 24 hours and prior to the onset of labor PROM occurs in approximately 10% of pregnancy. Patient with PROM

presents with leakage of fluid, vaginal discharge and pelvic pressure, but they are not having contraction. It occurs in 3 percent of pregnancies and is the cause of approximately one third of preterm deliveries. It can lead to significant perinatal morbidity, including respiratory distress syndrome, neonatal sepsis, umbilical cord prolapse, placental abruption, and fetal death. Appropriate evaluation and management are important for improving neonatal outcomes.[1,2]

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.[3-5]

With this background, the present study was conducted to evaluate the fetomaternal outcome in cases of PROM and to compare with controls.

METHODS

The present prospective study was conducted in the Department of Obstetrics and Gynecology, associated Dr. B.R.A.M. Hospital Raipur (C.G.), India from January to December 2013 among the patients diagnosed as premature rupture of membrane with women complain of leaking attending antenatal OPD and antenatal ward. This study was approved by ethical and scientific committee. All 1000 patients of PROM at term were studied and matched against 1000 suitable controls of women during the same period according to predesigned proforma.

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 any complication of pregnancy other than PROM that affect fetal and neonatal outcome e.g. IUGR, foetal malformation, preeclampsia Cases with multiple gestation APH and parathyroid and adrenal diseases, hepatic and renal failure DM type 1, Malabsorption.

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, pH test and fern test. 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. Statistical analyses were performed through MS-excel. All categorical data were reported as number and percent.

RESULTS

Table 1: Distribution of cases according to booking status.

Booking status	Study Group		Control Group	
	No	%	No	%
Booked	307	30.7	582	58.2
Un-booked	693	69.3	418	41.8
Total	1000	100%	1000	100%

More number of unbooked cases was found in study group in comparison to control group. Maximum women were in the age group of 20-25 years (Table 1 and Table 2).

Table 2: Distribution of cases according to age in years.

Age group in years	Study Group		Control Group	
	No	%	No	%
<20	170	17	194	19.4
20-25	571	57.1	580	58
>25 - 30	223	22.3	203	20.3
>30 - 35	32	3.2	18	1.8
>35 - 40	4	0.4	5	0.5
Total	1000	100%	1000	100%

Table 3: Distribution of cases according to gestational age.

Gestational age in weeks	Study group		Control group		Chi value, df, p value
	No	%	No	%	
28-32	61	6.1	26	2.6	16.938, 3, p<0.001 [Significant]
>32- 37	232	23.2	231	23.1	
>37- 40	664	66.4	710	71	
>40	43	4.3	33	3.3	
Total	1000	100%	1000	100%	

Table 4: Distribution according to mode of delivery.

Mode of Delivery	Study group		Control group		Chi Value, df, p value
	No	%	No	%	
Vaginal	680	68	866	86.6	98.6, 1, <0.001 [Significant]
LSCS	320	32	134	13.4	
Total	1000	100%	1000	100%	

Majority of cases in both the groups had pregnancy more than 37 weeks. 68% cases in study group and 86.6% cases in control group had vaginal delivery.

Percentage of LSCS was more among study group and compared to control. Maximum cases (91.04%) 783/860 delivered within 18 hrs of induction (Table 3, 4, 5).

Table 5: Distribution of according to induction delivery interval in hours.

Induction delivery (Interval in hours)	No. of cases	
	No	%
<6 hrs	(n=146)	(17%)
>6-12 hrs	(n=284)	(33%)
>12-18 hrs	(n=353)	(41%)
>18-24 hrs	(n=77)	(9%)
Mean IDI=10.6HRS	Total= 860	

Table 6: Distribution of cases according to amniotic fluid index.

USG Parameters AFI	Study group		Control group	%	Chi value, df, p value
	No	%	No	0.6%	
<5cm	583	58.3%	44	4.4%	282.05, 2, <0.001 [Significant]
5-10cm	417	41.7%	560	56%	
Adequate >10cm	0	0	396	39.6%	
Total	1000	100%	1000	100%	

Table 7: Distribution of cases according to baby weight.

Baby weight in kg	Study group		Control group		Chi value, df, p value
	No	%	No	%	
<2Kg	183	18.3%	90	0.9%	119.623,3, <0.001 [Significant]
2-2.5kg	302	30.2%	192	19.2%	
>2.5-3kg	461	46.1%	555	55.5%	
>3kg	54	5.4%	163	16.3%	
Total	1000	100%	1000	100%	

PROM results in oligohydramnios due to drainage of liquor amnii. Majorities of the babies were underweight among mothers with PROM.

The association between gestational age and APGAR score was found significant in relation to mode of delivery.

Thus the better fetal outcome was associated with term gestational age. Higher chances of maternal complication were found among mothers with PROM (Table 6, 7, 8, 9, and 10).

Table 8: Foetal outcome according to gestational AGL in LSCS.

Gestational age	APGAR score						Chi value, df, p value
	0-3	%	4 -7	%	8 -10	%	
<37weeks (N=126)	20	15.87	40	31.75	66	52.38	52.22,2,0.001 [Significant]
>37weeks (N=194)	3	1.55	21	10.83	170	87.63	

Table 9: Foetal outcome according to gestational age in vaginal delivery.

Gestational age	APGAR Score						Chi value, df, p value
	0-3	%	4-7	%	8-10	%	
<37 weeks (N=167)	23	13.77	61	36.53	83	49.70	142.236, 2, p>0.001 [Significant]
>37 weeks (N=513)	13	2.54	21	4.09	408	79.53	
Total = 680	56		161		463		

Table 10: Maternal complication between study and control group.

Maternal complication	Study group	Control group
Fever (344)	250(72%)	94(28%)
Wound Gap (37)	28(75.67%)	9(24.33%)
Sepsis (7)	5(71.43%)	2(28.57%)
Total	283(28.3%)	105(10.5%)

DISCUSSION

There are many studies which cover different aspects of fetomaternal outcome in PROM cases.[6-9] 69.3% cases in the study group were unbooked, 30.7% were booked. 58.2% cases in the control group were booked, 41.8% were unbooked. 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. Most of women never received antenatal care and were unbooked similar to other studies such as Shah M and Sandesara P observed that 76% in study group were unbooked and 24% were booked .Our study supports proper antenatal care ,early detection and prevention of obstetrics complication and can improve the fetomaternal outcome.[10]

In the present study 57.1%% cases that is 571/1000 were between 20-25 yrs age and 22.3% cases (223/1000) were between 25-30 yrs age so nearly more than three fourth cases that is 79.4% (794/1000) presented between 20 to 30 yrs of age. Nearly 17% cases that is (170/1000) cases were below 20 yrs of age and only 36/1000 i.e.3.6 % only were above 30 years of age. This was found to be similar to the control group. Our findings were also supported by Shah M and Sandesara P in their study. Studies by Lieman JM et al and Chaudhuri S et al showed that mean maternal age for the study cohort was 24.7_5.8 years and 23.2±3.9 respectively.[10-12]

Gestational age in majority of the study subjects 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.[13,14]

Rate of Spontaneous Vaginal delivery and caesarean section was 68% and 32% while LSCS was 13.4% in control group. Rate of LSCS were range from 8.3 to 56% whereas rate of Spontaneous Vaginal delivery 42.3 to 88% in many previous studies.[15-17]

In present study best fetal outcome in terms of High APGAR score was observed in majority cases, when LSCS was done earlier. Previous many studies have established definitive relationship between timing of LSCS with fetal outcome.[18,19]

Fever occurs in 72% cases as against in 28% cases in control group. 28 (75.67%) cases of wound gap in cases of prom and 9 (24.33%) cases in control group 5 (71.43%) cases of sepsis in study group and 2 (28.57%) cases in control group. Maximum no. of fever cases 25 % (250/1000) in study 126 group as compare to control group 9.4 % (94/1000). Morbidity (28.3%) 283 cases out of 1000 in study group and (10.5%) 105 out of 1000 in control group which was statistically significant. Many studies also revealed higher chances of maternal complication with PROM cases.[20-22]

CONCLUSION

From the above study, it can be concluded that PROM is 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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