

A Study on the Relationship between High Vaginal Swab Culture and Fetomaternal Outcome in Prelabour Rupture of Membranes at Term

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Abstract: Background: Premature rupture of membranes is an enigmatic condition associated with high risk of maternal and perinatal morbidity and mortality. It is the spontaneous rupture of chorioamnion before the onset of uterine contractions. Aim of the Study: To study the relationship between high vaginal swab culture and fetomaternal outcome in prelabour rupture of membranes at Term. Methods: A Prospective study which included antenatal mothers admitted at term with diagnosis of PROM in Govt RSRM lying in hospital from June 2021 to May 2022 which included around 200 antenatal mothers. In this study, PROM delivery interval, Induction delivery interval, mode of delivery, High vaginal swab culture and sensitivity, signs of chorioamnionitis, Apgar score at birth and 5 minutes, Birth weight, CRP are noted. Results: Majority of PROM falls under low socioeconomic status. Febrile morbidity in mother, perinatal morbidity, rate of cesarean section is increased in women with PROM. Conclusion: Early recognition of genital tract infection should be done and treated appropriately. Women should be educated about the possibility of PROM and the need to report at the earliest. A combined effort of obstetrician and neonatologist is necessary to reduce the perinatal morbidity and mortality.

Keywords: PROM, Vaginal swab, Perinatal morbidity, Labour outcome, Infection

1. Introduction

Premature rupture of membrane is an enigmatic condition which is associated with high risk of maternal and perinatal Morbidity and mortality.¹ It is the leakage of amniotic fluid beginning at least 1 hour prior to the onset of labour at any gestational age.^{2, 3, 4} It occurs in 5 - 20% of all labours. These women are prone to cord compression, cord prolapse and high risk of infection. The longer the time interval between rupture of membrane and onset of labour the greater the risk of ascending infection and chorioamnionitis.

PROM is associated with ⁶increased risk of chorioamnionitis, ⁹ unfavorable cervix and dysfunctional labour, ^{7, 8} increased cesarean rates, postpartum hemorrhage and ¹⁴endometritis in mother. In the fetus, there is increased occurrence of hyaline membrane disease, intra ventricular hemorrhage, sepsis, cord prolapse, ¹⁶ neonatal infection, fetal distress and increased fetal wastage. Thus, earlier the gestational age, longer the latency and more the complications.

Aim of the Study

- To find the incidence of positive high vaginal swab culture in PROM
- To identify the common organism causing infection and its antimicrobial sensitivity
- To assess the maternal and neonatal outcome of PROM in relation with vaginal infection.

2. Methods and Materials

All women admitted with diagnosis of PROM in Government RSRM lying in hospital during the period of June 2021 to May 2022 were studied in detail. Total deliveries during the same period were 12342. Of these, 12008 were live births. 200 pregnant women with diagnosis of PROM were included.

Detailed history taken, complete examination was done to exclude the presence of any disorders. History of presenting complaints of leaking per vaginum, duration of leaking, colour of liquor recorded. Two high vaginal swabs taken before doing per vaginal examination and sent for culture and sensitivity. Antibiotics are started and continued till delivery.

In this study, ruptured membranes more than 6 hours, patients with features of chorioamnionitis like fever, tachycardia, uterine tenderness or foul smelling liquor, fetal distress and meconium stained liquor on admission, women in active labour, surgical diseases complicating pregnancy, high risk like Twins, IUGR, IUD, APH, Polyhydramnios, preeclampsia, eclampsia, GDM, GHTN were excluded.

3. Results and Analysis

Table 1: Age Wise Distribution

AGE%	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
<=19	12	6%	6	3%	18	9%
20 - 24	71	36%	32	16%	103	52%
25 - 29	46	23%	21	11%	67	34%
30 - 34	6	3%	6	3%	12	6%
Total	135	68%	65	33%	200	100%

Maximum women were in age group of 20 - 24 years. Highest age was 34 years. Lowest age 18 years. The mean age was 23.7 with standard deviation of 3.4 years.

Table 2: Obstetric Code

OBS Score	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
Multi	47	23.5%	20	10%	67	33.5%
Primi	88	44%	45	22.5%	133	66.5%
Total	135	67.5%	65	32.5%	200	100%

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Primigravida accounted 66% in the study.22.5% of them were positive for vaginal swab.44% belongs to multigravida. P value is 0.5 which is statistically not significant.

Table 3: Socio Economic Status

SES	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
Low	87	44%	43	22%	130	65%
Middle	48	24%	22	11%	70	35%
Total	135	68%	65	33%	200	100%

65% belongs to low socioeconomic status.35% belongs to middle socioeconomic status.43% of swab positive belongs to lowp socioeconomicgroup which is statistically significant.

Table 4: Modified Bishop Score

Modified Bishop score	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
0 - 2	12	6%	7	4%	19	10%
3 - 4	69	35%	45	23%	114	57%
5 - 6	54	27%	13	7%	67	34%
Total	135	68%	65	33%	200	100%

Highest number of women 57% had a bishop score of 3 - 4. Out of 57% women, 35% had positive swab culture in which P value is 0.01 which is statistically significant.

Table 5: PROM delivery interval

TIME	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
13 - 24	91	46%	20	10%	111	56%
25 - 48	42	21%	43	22%	85	43%
6 - 12	2	1%	2	1%	4	2%
Total	135	68%	65	33%	200	100%

56% women delivered within 12 - 24 hours.43% women delivered in 24 - 48 hours. Mean duration of PROM to delivery interval 25 hours.

Table 6: Outcome of Labour in Primi and Multi

Mode of Delivery	Multi		PRIMI		Total	Total
	Multi	Multi%	PRIMI	PRIMI%		
Labour natural	43	22%	92	46%	135	68%
LSCS	18	9%	34	17%	52	26%
Outlet forceps	3	2%	1	1%	4	2%
Vacuum	3	2%	6	3%	9	5%
Total	67	34%	133	67%	200	100%

46% Primi had normal vaginal delivery.17% primi had cesarean section. Cesarean section was more in primigravida when compared to multigravida.

Table 7: Indication For Cesarean Section

Indication for LSCS	VAGINAL SWAB		Total
	Neg	Pos	
Fetal distress	12	11	23
Failed induction	11	2	13
Failure to progress	9	5	14
Oligohydramnios	2		2
Total	34	18	52

Common indication for cesarean section was fetal distress accounting for 11.9%. Second common indication was failed induction.

Table 8: Vaginal Swab Culture Results

Vaginal Swab	Total	Total%
NG	135	68%
ECOLI	28	14%
KLEB	18	9%
ACINETOBACTER	6	3%
NON ALBICANS CANDIDA	5	3%
STREP	4	2%
PSEUDOMONAS	4	2%
TOTAL	200	100%

32% had positive high vaginal swab culture and sensitivity. Most common organism was Escherichia Coli.

Table 9: Maternal Morbidity

Complication	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
PPH	7	3.5%	11	5.5%	18	9%
Pyrexia	6	3%	14	7%	20	10%
Total	13	6.5%	25	12.5%	38	19%

19% women developed complications like pyrexia and postpartum hemorrhage.12% had positive vaginal swab culture and sensitivity.

Table 10: Baby CRP Results

CRP	VAGINAL SWAB				Total	Total
	Neg	Neg%	Pos	Pos%		
Positive	2	1%	49	25%	51	26%
Negative	133	67%	16	7%	149	74%
Total	135	68%	65	32%	200	100%

26% neonate had CRP Positive on sepsis screening. 25% neonate had CRP Positive among those with infection.

Table 11: Prom Delivery Interval And Maternal Complications

PDI	PPH	PYREXIA
13 - 24	18	15
25 - 48	0	0
6 - 12	0	0
Total	18	15

9% developed PPH among PROM delivery interval less than 24 hours.10% developed pyrexia. Most of them delivered within 24 hours.

Table 12: Perinatal Morbidity

Condition	Vaginal Swab				Total	Total
	Neg	Neg%	Pos	Pos%		
Birth Asphyxia	2	1%	6	3%	8	4%
Healthy	133	67%	59	30%	192	96%
Total	135	68%	65	33%	200	100%

Birth asphyxia accounted for 3% among those infections.

4. Conclusion

PROM complicates 5 - 10% all pregnancies. Complication increases with decrease in gestational age and increase in

latent period. Difficulties found in the diagnosis of PROM. Recognition of etiological factors and management.

First of all, women should be educated to have regular antenatal care where people advice regarding diet, nutrition and personal hygiene should be given. Early recognition of genital tract infection should be done and treated appropriately. Pregnancies complicated with PROM should have supervised labour preferably in an institution. Management of each case has to be individualized.

Thus, a team approach, early recognition of Premature rupture of membranes and their associated complication and appropriate. Management of situation helps in reducing the problems caused by PROM to a greater extent.

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