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Ahmed El-Dakamawy

Gyn/Obs department, Al-Azhar University, dr.mystery.knight@gmail.com

Hossam Aldin Kamel

*Obstetrics and Gynecology Department, Faculty of Medicine, Al-Azhar University, Cairo, Egypt.,
hossam626@yahoo.com*

Mohamed Mohamed

*Obstetrics and Gynecology Department - Faculty of Medicine – Al-Azhar University,
mohsherif04@gmail.com*

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Comparative Study Between The Effect Of Home And Hospital Management On Latent Period Of Pre-Labor Rupture Of Membranes

Ahmed shaaban Abdel-Monem ^{1,*} M.B.B.Ch, Hossam Al-Din Hussein ¹ MD,
Mohamed Mahmoud Mohamed ¹ MD

Obstetrics &
Gynecology

*Corresponding Author:

Ahmed shaaban Abdel-Monem

Dr.mystery.knight@gmail.com

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¹Obstetrics and Gynecology Department, Faculty of Medicine, Al-Azhar University Cairo, Egypt.

ABSTRACT

Background: latent period of pre labor rupture of membranes is the period between ruptures and beginning of labor pain.

Aim of the work: To evaluate and compare the effects home and hospital management on latent period of prelabor rupture of membranes.

Patients and methods: The study was done at the department of Obstetrics and Gynecology, Faculty of Medicine, Al-Azhar University, Cairo, Egypt from June 2021 to January 2022. A total of 170 female patients with pre labor rupture of membranes >37 weeks were randomly assigned into two groups; 85 pregnant women with pre labor rupture of membranes discharged to home versus 85 pregnant women were admitted at hospital.

Results: home management for women with PROM, has longer latent period versus hospital management group (P = 0.023) with significant statistically difference between two groups while other complications (chorioamnionitis, CS deliveries, admissions to NICU) were insignificant statistically difference between them.

Conclusion: regarding to hospital managements for females with PROM there is slightly higher rate of (maternal complication like (chorioamnionitis), slightly higher rate of CS deliveries, and neonatal complication which required admissions to NICU) than home management, but with no significant statistically difference. Regarding home managements for females with PROM, they had longer latent period from rupture of amniotic membranes till labor pain.

Keywords: Home management; hospital management; latent period; prelabor rupture of membranes.

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INTRODUCTION

Human fetal membranes are the internal lining of the gravid intra-uterine space. Embryonic membranes are comprised of the amnion and the chorion, and are linked by collagen rich extra cellular matrix (ECM) ¹³. The amnion and chorion have a significant role in preserving gestation by giving multilevel shield to the embryo ¹⁵. Prelabor rupture of membranes is rupture of membranes earlier to the beginning of labor pain . Membrane ruptures prior to labor that happens before the gestational 37th wks. is stated as "pre-term prelabor rupture of membranes" ¹². The latent period of labor is the interval from membrane ruptures to labor pain beginning ⁵. Management of PROM: In the patients in which expectant managing is selected, approximately 80% and 95% of cases spontaneous labor began within 12h and 24h resp. ¹¹. If spontaneous labor doesn't happen near the time of presentations in those who don't have contraindications to labor, labor inductions must be suggested ⁸. For patients who request expectant

management at home until labor or a complication ensues, the following criteria are reasonable: Cephalic presentation, No intra-uterine infection., Reassuring fetal heart rate, Amniotic fluid pocket on ultrasound at least 2 by 2cm, Reliable patient, Assistance at home, Dependable transportation, Home located within 20 minutes of the hospital, Ability to check pulse and temp. every six hours, with parameters to notify their clinicians (e.g., pulse >100 beats per minute temperature ≥ 38 C) .¹⁴

The present study aimed to compare between home and hospital management effect on latent period of prelabor rupture of membranes.

PATIENTS AND METHODS

This work has been performed between June 2021 and January 2022, on 170 female patients attending to Sayed Galal University hospital and El Delengat Public Hospital during the time of the study.

Inclusion criteria:

Maternal ages between 18 and 35-yrs old Singleton gestation, cases with PROM, Gestation age completed the 37th wks., Cephalic presentations, no signs of chorioamnionitis (elevation of fever >38 C, mother tachycardia>100 bpm, fetal tachycardia> 160 bpm, uterine tenderness, foul odor of AF or leukocytosis> 15000 cell per mm), Comforting examinations of fetal well-being: (nonstress examinations, Cardiotocography (CTG), biophysical profile), clear AF and No contractions.

Exclusion criteria:

Maternal ages less than 18 or more than 35-yrs, Multi-gestation, Rupture of membranes earlier to the 37th gestational wks. or post-date, Suspected intra-uterine growth retardations (IUGR), Congenital fetal anomalies, Malpresentation or malposition, Placental anomalies, High risk gestation as (HTN, diabetes mellitus (DM) and preeclampsia), Previous cesarean sections or other uterine scars, Existence of symptoms of chorioamnionitis (high risk for fetal and maternal complications), Existence of symptoms of fetal distress, Meconium-stained liquor (fetal distress).

Patients divided in two groups (170 female in each) by randomization.

Group A: included (85) pregnant women were discharged home.

Group B: included (85) pregnant women were admitted at hospital.

Statistical method

Calculation of the sample size was based on Setting the power= 0.80 and $\alpha=0.05$ with by means of PASS 11th release (Hintze, 2011), a minimal sample size of 78 cases in every group was needed to get statistical significance among assumed hours of latency period between PROM and delivery (29.9 ± 17.6 and 11.5 ± 10.5 respectively) as well as rates of vaginal delivery in home-based and hospital-based management (78.9% and 58.3% respectively) (Dussaux et al., 2018). The sample will be raised for possible attrition up to 85 in each group with total 170 cases.

SPSS-22 package by IBM, USA was utilized for statistical analysis. Quantitative data with normal distribution has been presented as means (\pm SD) thereafter examining the normality using Shapiro-Wilk testing, then comparison done via non-dependent t-testing if data has normal distribution and Mann Whitney testing if data has non-normal distribution. Qualitative data has been presented as number and percentages and comparison done via Chi square testing and Fisher's Exact testing for variables with small predictable numbers. The results considered significant at Pvalue < 0.05.

RESULTS

(Age, residence, socio-economic state, Gestational age, gravidity, parity, abortion, mode of delivery (Cs or NVD), chorioamnionitis, NICU admission and AFI) were with no significant difference in both groups (Table 1).

While significant change in the latent period among the study groups (the time between rupture of membranes till beginning of labor pain) and home management had longer latent period than hospital management (Table 2) and (Figure 1).

Parameters	Groups		Group A Home (n=85)	Group B Hospital (n=85)	P-value
Age	Mean (SD)		28.72 (3.51)	28.88 (3.7)	0.767
Residence	n (%)	Urban	49 (57.6)	44 (51.8)	0.441
		Rural	36 (42.4)	41 (48.2)	
Socio-economic	n (%)	High	33 (38.8)	28 (32.9)	0.122
		Low	34 (40)	27 (31.8)	
		Medium	18 (21.2)	30 (35.3)	
Gestational Age	n (%)		37.49 (0.5)	38.44 (1.24)	0.283
Gravidity	Mean (SD)		3.76 (1.21)	3.14 (1.15)	0.134
Parity	Mean (SD)		2.31 (1)	1.81 (0.91)	0.581
Abortion	Mean (SD)		0.46 (0.66)	0.35 (0.61)	0.281
Mode of delivery	n (%)	Cs	33 (38.82)	36 (42.35)	0.639
		NVD	52 (61.18)	49 (57.64)	
Chorioamnionitis	n (%)		11 (12.94)	14 (16.47)	0.515
NICU Admission	n (%)		15 (17.65)	19 (22.35)	0.443
AFI	Mean (SD)		6.079 (2.45)	5.212 (2.59)	0.261

Table 1: shows that all parameters mentioned above were with nonsignificant change among the study groups.

		Group A Home (N=85)	Group B Hospital (N=85)	P-Value
Latent period n (%)	<12	55 (64.71)	61 (71.76)	0.023
	12-23	20 (23.53)	20 (23.53)	
	≥24	10 (11.76)	4 (4.71)	

Table 2: shows that was significant difference in latent period between the two groups.

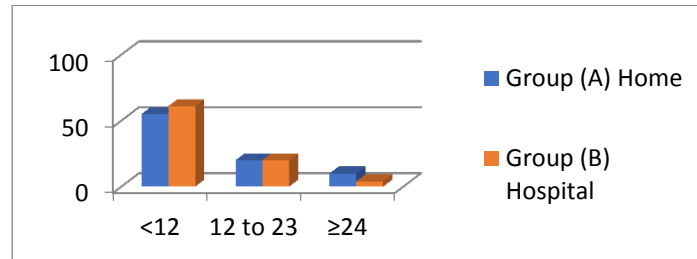


Fig. 1: shows that was significant difference between latent period in the two group.

DISCUSSION

Pre-labor rupture of membranes (PROM) is rupture of membranes earlier the beginning of labor pain. Membrane ruptures prior labor and earlier to the 37th gestational week is described to as “pre-term prolabor ruptures of membranes.”¹² Sterile speculum examinations deliver a chance to check for cervicitis and prolapses of the umbilical cord or fetal organs, evaluate cervical dilatations and effacement, and get cultures as proper. The diagnosing of membrane ruptures characteristically is established by conservative clinical assessment, which comprises the visualizations of amniotic fluids moving from the cervical channel and pooling in the vagina, a simple pH examination of vaginal fluids, or arborizations (ferning) of dried vaginal fluids, that is recognized under microscopic assessment⁴. The period from membranes ruptures and onset of labor is called the latent period. Some authorities advocate there must be a minimum latent period (such as 1 hour to 4 hours) for the diagnosis of PROM to stand. While usage of anti-biotics reduces the progress of chorioamnionitis, newborn infection and metritis, chorioamnionitis has rates varying from 17.60 to 37.50%²

Our study results found that regarding the age, residence and socio-economic state of included subjects there was no statistical difference between included groups.

Our results are similar to that of Yasmina A et al, in Morocco in 2017¹⁷ as they stated a mean age of 28.2 yrs. with (range:19-48 yrs.). By cons Esteves JS et al, in Brazil in 2015⁶ found the mean age of 30 yrs. (range:16-45 yrs.). Aziz N et al, in the US in 2008³ revealed 85.80% of cases were younger than 35years.

About mode of delivery, we found that 33 (38.82%) women had CS in home managed group, versus 36 (42.35%) in hospital managed group, with no statistically significant difference. This is what as well revealed by Cochrane systematic review by Abou El senoun et al. (2014)¹ that there was some

indication that cases treated in hospitals were more expected to birth via CS (RR 0.28, 95% CI 0.07 to 1.15). Whereas other report revealed that cases were more expected to have CS if they were managed at homes rather than in hospitals: (13 versus 8.9 %).

Hannah et al., (2000)⁹, revealed that cases treated at home in comparison to in a hospital, having an elevated risk of CS (OR 1.48 95% CI 1.03,2.14). So as regard cases managements either at home or at hospitals there is high rate of CS 38.82% and 42.35% respectively.

In our study 15 (17.65 %) neonatal admission to NICU showed in home managed group compared to 19 (22.35%) in hospital admitted group with nonsignificant change, and it is a high rate of newborn complications. This agree with (Jomeen et al.,2002)¹⁰ showed that there was nonsignificant change among 2 groups as regard newborn infections (newborn infections screen -ve): 12/17(12 not screened) vs. 11/12 (15 not screened), $\chi^2=2.98$, Pvalue =0.23. In contrast with other study by Hannah et al. (2000)⁹ that showed that cases expectantly with managements at home in the term PROM had newborn infections (3.1 versus1.7%), then in hospital. In contrast to our results, Medina et al. showed that; sepsis was happened in 5.20% of infants after PROM. In preceding reports, the rate of sepsis varied between 5.4 and 14 %. The clarification for low occurrence of RDS in this work was that we assessed all the newborns and 33% of the newborns were term.

Our study results found that regarding the chorioamnionitis incidence we noticed that 11 women in group A suffered of chorioamnionitis (12.94%), versus 14 women in group B (16.47%), with no statistically significant difference according to chorioamnionitis. This agree with Abou El Senoun et al. (2014), also revealed that there was no sign of changes among groups for chorioamnionitis. But this not agree with Secondary analysis of cases with home management in the term PROM investigation showed that cases with home management have

higher satisfaction with their care, but they prone to elevated risk of maternal infections (10.1 versus 6.4%)⁹.

In our study, the length of latent period (LP) was longer in women discharged to home (group A) <12 hrs. was 55 cases (64.71%), 12-23 hrs. was 20 cases (23.53 %) and ≥24 hrs. was 10 cases (11.76 %) with mean± SD 11.78±7.13 (hrs.) as compared to women admitted at hospital (group B) <12 hrs. was 61 cases (71.76 %) ,12-23 hrs. was 20 cases (23.53 %) and ≥24 hrs. was 4 cases (4.71 %) with mean± SD 10.12 ± 5.54 (hrs.) with significant statistically difference between 2 groups according to latent period (hrs.). This agrees with Garabedian et al. (2017)⁷ findings where 32 women were managed at home and 24 women with hospital management. The period of latency was more in-home group than in-hospital group [27.5 (20 -37) versus 16.5(12 -29.5)].

CONCLUSION

Regarding hospital managements for cases with PROM there is slightly higher rate of (maternal complication (chorioamnionitis), CS deliveries, and neonatal complications which may require admissions to NICU) than home management, but with no significant statistically difference. In other side home management for women with PROM, they had longer latent period from rupture of amniotic membranes till labor pain.

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