



ISSN: 2395-6429

## ROLE OF ADMISSION TEST IN PREDICTING FOETAL OUTCOME IN PRELABOUR RUPTURE OF MEMBRANES

\*Subapriya E.R., Sangeerani M and Mallika A

Department of Obstetrics and Gynaecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Chidambaram, Tamil Nadu, India-608 002

### ARTICLE INFO

#### Article History:

Received 26<sup>th</sup> July, 2017  
Received in revised form 5<sup>th</sup>  
August, 2017  
Accepted 16<sup>th</sup> September, 2017  
Published online 28<sup>th</sup> October, 2017

#### Key words:

Cardiotocography, admission test, foetal distress, perinatal outcome.

### ABSTRACT

**Back ground:** To predict the neonatal outcome in term pre-labour rupture of membranes by admission (CTG) cardiotocography testing. **Methods:** A total of 200 patients with term pre-labour rupture of membranes meeting the inclusion criteria were subjected to admission CTG testing in this prospective study. The CTG tracing was categorized based on Royal College of Obstetricians and gynaecologists (RCOG) criteria. Neonatal outcome was studied and correlated with the admission CTG testing. **Results:** Out of 200 patients the majority of women were primigravida (76%) belonging to the age group of 18-24 years. The admission CTG were 'reactive' in 66%, 'suspicious' in 24% and 'omnious' in 10% women. **Conclusion:** The admission CTG appears to be a simple non-invasive test that can serve as a screening tool in 'triaging' fetuses in patients with term pre-labour rupture of membranes.

Copyright © 2017 Subapriya E.R., Sangeerani M and Mallika A. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

The goal of antepartum surveillance of the fetus during labour is to ensure the delivery of a healthy baby in good condition with the minimum intervention.<sup>[1]</sup> Foetal monitoring during labour identifies the fetuses at risk of hypoxic damage. So that appropriate intervention could be instituted to optimise perinatal outcome.<sup>[2]</sup> The fetal distress in labour is a common occurrence in both first and second stage of labour. Therefore every fetus deserves intrapartum fetal monitoring. The pre-labour rupture of membranes (PROM) refers to rupture of the membranes prior to the onset of labour and prior to the onset of clinically apparent labour contractions.<sup>[3]</sup> It can lead to significant perinatal morbidity, including respiratory distress syndrome, neonatal sepsis and fetal death. Admission test was first described by Ingemarsson. It is a short recording (20 minute) of CTG done during labour. The aim of the test is to assess fetal well-being at the onset of labour and identify those fetuses that may be already hypoxic or may not withstand the stress of uterine contractions which can expose them to hypoxia in labour.<sup>[4]</sup>

### MATERIALS AND METHODS

This is a prospective study conducted in the labour ward in Department of Obstetrics and Gynaecology in Rajah Muthiah Medical College and Hospital, Annamalai University, Chidambaram for a period of 2015-2017. The protocol for the study was approved and prior permission was also taken from

the institutional human ethics committee of Rajah Muthiah Medical College and Hospital, Chidambaram. A total of 200 patients were enrolled in this study as per the inclusion criteria. Written informed consent obtained from the patients before participation into the study. All antenatal women at term gestation, in early labour with rupture of membranes attending RMMC&H labour room.

**Inclusion Criteria:** 1. All antenatal women at term gestation in early labour with rupture of membranes, 2. Vertex presentation, 3 Singleton pregnancy.

**Exclusion Criteria:** 1. Multi-parity, 2. Twin gestation, 3. Presentation other than vertex, 4. Preterm or post term, 5. Pregnancy induced hypertension, 6. Diabetes mellitus, 7. Antepartum haemorrhage, 8. Antenatal mother with medical illness, 9. Foetal anomaly, 10. Fetal demise and 11. Patients in second stage of labour. On admission, A detailed history including age, parity, antenatal care, menstrual, obstetric and medical history were documented. General physical examination was done. Per abdominal and per speculum, per vaginal examination done to determine the stages of labour and colour of liquor, following which mothers were subjected to admission test. Patient was placed in left lateral position. Fetal heart rate can be recorded using an external transducer. A tracing was taken for 20 minutes by CTG machine. The patients were followed up according to the admission test results. FHR tracings were classified as reactive, suspicious, omnious. Patient with reactive pattern were monitored with

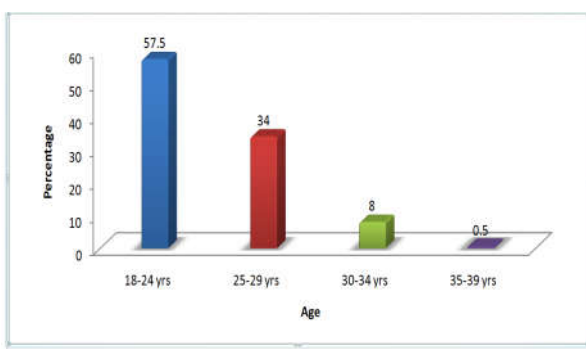
fetoscope and electronic monitoring done once in 4 to 5 hours. In cases of fetal distress emergency interventions were made according to the stage of labour. Patients with non reactive pattern were to be kept on continuous electronic fetal monitoring with intermittent auscultation. The findings of admission test correlated with outcome of fetus. To evaluate the outcome of pregnancy, omnious FHR changes are indicative of fetal distress and newborn with APGAR score <7 at 5 minutes follow spontaneous delivery were considered.

### RESULTS AND ANALYSIS

The demographic data and admission test tracings were analysed using Pearson’s chi-square test. A total of 200 pregnant women were studied. Majority belong to 18-24 with mean age of 24.7 years in primigravida (76%) compared to that of multi gravida. Out of 200 cases, percentage of PROM with gestational age group between 38-39 weeks is 60.5%. Among 200 cases delivery occurred within 6 hours was 51.5%. Normal FHR tracings were observed in 66% women whereas suspicious tracing in 24% and 10% had abnormal results. The incidence of low APGAR, NICU admission, MSL, fetal distress was significantly higher in suspicious and omnious group. 94.8% of neonates had fetal distress in suspicious and pathological tracing. Where as only 5.3% of neonates had fetal distress in reactive group. It is evident from Table 8, that the incidence of fetal distress increased with worsening of admission CTG (p <0.001). In our study 164 cases have clear liquor and 36 cases have meconium stained liquor. In our study 2.5% had early onset sepsis and vigorous baby, 19% of the baby had low birth weight 3% of the baby had TTN and RD. 2% of the baby had IUGR.

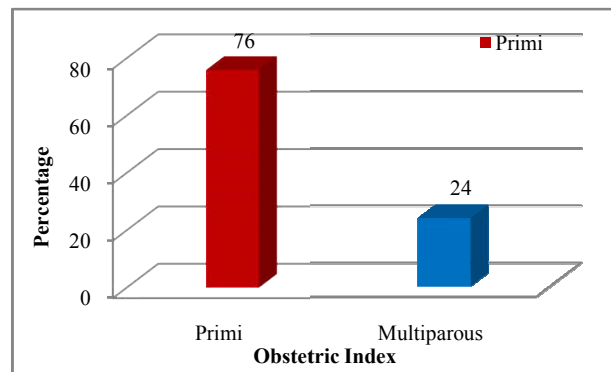
**Table 1** Age distribution

Age	No. of cases	Percentage
18-24 yrs	115	57.5
25-29 yrs	68	34.0
30-34 yrs	16	8.0
35-39 yrs	1	0.5
Total	200	100.0



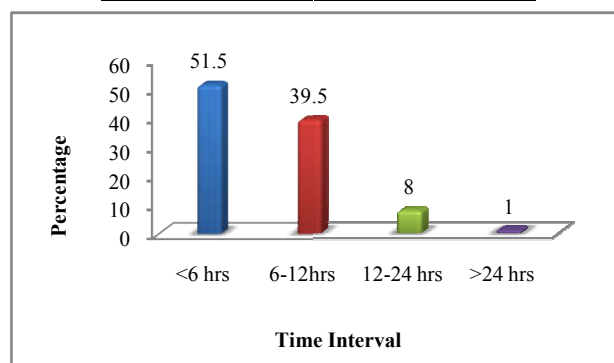
**Table 2** Obstetric index

Obstetric index	No. of cases	Percentage
Primi	152	76.0
Multiparous	48	24
Total	200	100.0



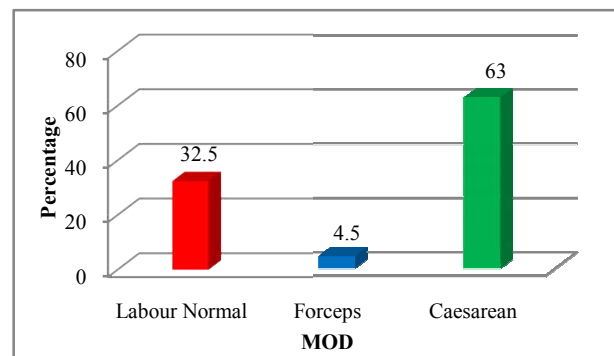
**Table 3** Time interval from rupture of membrane and delivery

Time Interval	No. of cases	Percentage
<6 hrs	103	51.5
6-12hrs	79	39.5
12-24 hrs	16	8.0
>24 hrs	2	1.0
Total	200	100.0



**Table 4** Mode of delivery

MOD	No. of cases	Percentage
Labour Normal	65	32.5
Forceps	9	4.5
Caesarean	126	63.0
Total	200	100.0



**Table 6** Admission test

AT	No. of cases	Percentage
Reactive	132	66.0
Suspicious	48	24.0
Omnious	20	10.0
Total	200	100.0

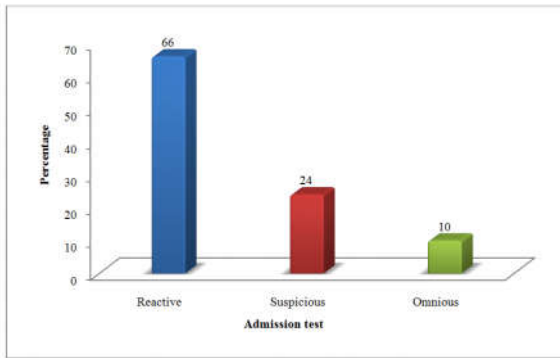


Table 7 Correlation of foetal outcome with Admission test

Admission test	APGAR						Total	
	7-10		6-4		<4		N	%
	No of cases	%	No of cases	%	No of cases	%	N	%
Reactive	51	85.0	81	60.4	0	.0	132	66.0
Suspicious	9	15.0	38	28.4	1	16.7	48	24.0
Omnious	0	.0	15	11.2	5	83.3	20	10.0
Total	60	100.0	134	100.0	6	100.0	200	100.0

Chi-Square Tests

	Value	Df	P value
Pearson Chi-Square	49.545	4	<0.001

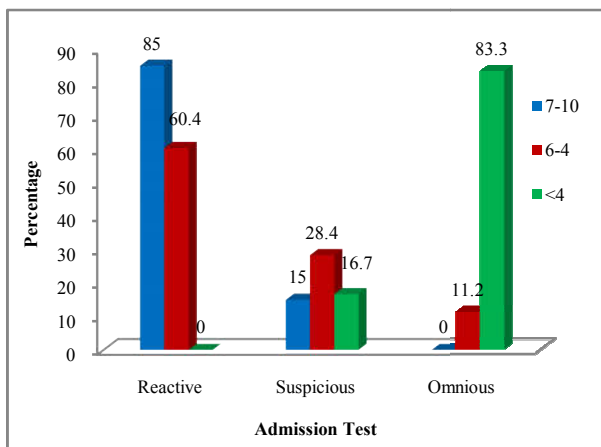


Table 8 Correlation of foetal distress with Admission test

Admission test	Fetal distress				Total	
	Fetal distress		Normal		No of cases	%
	No of cases	%	No of cases	%		
Reactive	1	5.3	131	72.4	132	66.0
Suspicious	1	5.3	47	26.0	48	24.0
Omnious	17	89.5	3	1.7	20	10.0
Total	19	100.0	181	100.0	200	100.0

Chi-Square Tests

	Value	df	P value
Pearson Chi-Square	147.4	2	<0.001

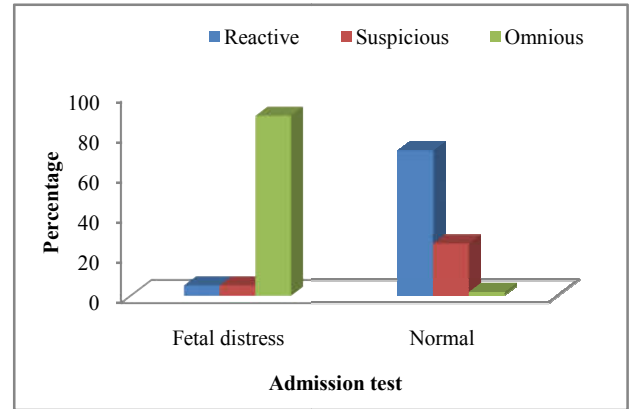
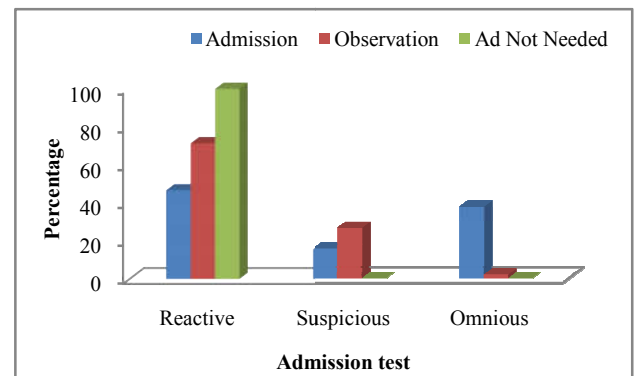


Table 9 Incidence of NICU with Admission test

Admission test	NICU						Total	
	Admission		Observation		AD Not needed		N	%
	No of cases	%	No of cases	%	N	%		
Reactive	21	46.7	110	71.4	1	100.0	132	66.0
Suspicious	7	15.6	41	26.6	0	.0	48	24.0
Omnious	17	37.8	3	1.9	0	.0	20	10.0
Total	45	100.0	154	100.0	1	100.0	200	100.0

Chi-Square Tests

	Value	df	P value
Pearson Chi-Square	50.237	4	<0.001



DISCUSSION

Electronic FHR monitoring at the time of admission in labour has been employed by some centres to identify foetuses that are at an increased risk of hypoxia. Prelabour ROM is defined as spontaneous rupture of the membranes before the onset of labour. The etiology of PROM is multi-factorial and in some cases is yet unclear. Management of Pregnancies with PROM varies depending gestational on gestational age and obstetric status. Out of 200 patients studied 57.5% were in the age group of 18-24 years. 34% were in the age group for 25-29 years which is comparable to Abed G Nagure *et al.* (2013).<sup>[5]</sup> In the present study group primi was 76% multipara 24% which is correlating with Mohd R *et al.*<sup>[6]</sup> In our study 91% of patients delivered within 12hrs, and 8% were delivered in 13 -24 hrs and 1% in 24hrs. this is comparable to Sharma SK *et al.*<sup>[7]</sup> where <12 hours were delivered by 54.2%, delivered by 13-24 hours were 37.5%. In our study 66% of patient had reactive group and suspicious falls under 24% omnious falls under 20%. Simialr observation demonstrated by Abed G Nagure *et al.*<sup>[5]</sup> In our study 32.5% cases had normal vaginal deliveries

4.5% cases delivered by forceps application and 63% cases had caesarean delivery. In our study 5.3% of reactive and suspicious tracing were associated with fetal distress, 89.5 % of pathological tracing were associated with fetal distress. The results are similar to the study conducted by Sandhu *et al.*,<sup>[8]</sup> Libiran *et al.*,<sup>[9]</sup> and Ingemarsson *et al.*<sup>[10]</sup> In our study 37.8% of babies born to patients with ominous AT had NICU admissions compared to 15.6% and 46.7% of those babies born to patients with suspicious and reactive AT. This was correlated with Sandhu *et al.*,<sup>[8]</sup> Use of EFM is controversial for example Impey *et al.*,<sup>[11]</sup> believe that neonatal outcome is not significantly improved by the use of admission CTG as compared to intermittent FHR auscultation during labour. Thacker *et al.*,<sup>[12]</sup> also reported that the use of EFM is of limited effectiveness and carries an increased risk of interventions. According to them increased information at admission will not necessarily lead to better clinical outcomes.

## CONCLUSION

The admission cardiotocograph is a simple non invasive test that can serve as a screening tool to detect foetal distress already present or likely to develop and prevent unnecessary delay in intervention. Prelabour rupture of membranes is responsible for increased perinatal morbidity and mortality. ANC cases should be educated regarding regular and timely ANC checkup. Continuous EFM can help to decide an optimum timing of LSCS terminating a trial of vaginal delivery. Admission test is good, economical non-invasive. The obstetrician and neonatologist should work as a team to ensure optimal care for mother and fetus.

## Acknowledgement

I am thankful to the Professor & HOD, Department of Obstetric and Gynaecology, Professors of the Department of Obstetric and Gynaecology, lectures from the Department of Obstetric and Gynaecology and co-postgraduates in Rajah Muthiah Medical College and Hospital, for their inspiration to take up this study and they guided me through each and every step of this Research Work, by giving useful suggestions and made me complete this work successfully.

## References

1. Whittle MJ, Martin WL. Turnbull's obstetrics. London: Churchill Livingstone; 2001.monitoring in Labour. In: Chamberlain G, steer P, editors.
2. Chandrarahan, E. Subaratnam A. Electronic foetal heart rate monitoring in current and future practice. *J. Obstet Gynecol India*. 2008; 58(2): 121-130.
3. Caughey AB, *et al.* Contemporary diagnosis and management of preterm premature rupture of membranes. *Rev Obstet Gynecol*.2008;11-22.
4. KeirseMj, Ohlssona, Treffers PE, Kanhani HHH. Prelabour rupture of the membranes preterm. In: Chalmers I, Enkin M, Keirs MJ, editors. Effective care in pregnancy childbirth. Oxford: Oxford University Press ;1989.p.666.
5. Abed G Nagure, Umashankar. M, Dharmavijay M.N, Mahe Darakshan.M. Saleem. December 2013: Vol - 3, Issue -1,P.156-164.
6. Mohd R, Srivastava AK. Labour admission test: a screening test for foetal distress in labour. *Int. J. Reprod Contracept Obstet Gynecol*. 2017; 64: 452-6.
7. Sharma SK, Dey M. Maternal and neonatal outcome in cases of premature rupture of membranes beyond 34 weeks of gestation. *Int. J. Reprod Contracept Obstet Gynecol*. 2017; 6: 1302-5.
8. Sandhu GS, Raju R *et al.* Admission Cardiotocography Screening of High Risk Obstetric Patients. *Medical Journal Armed Forces India*. 2008; 64(1):43-5.
9. Libiran MJ, Solis MS, Santos RR, Baga EB. Admission test as predictor of intrauterine foetalasphyxia. *Philipp J. Obstet Gynecol*.1999.
10. Ingemarsson. I, Arulkumaran S, Ingemarsson E, Tambyraja RL, Ratnam SS. Admission test: A screening test for fetal distress in labour. *Obstet Gynecol*. 1986; 68: 800-6.
11. Impey L, Reynolds, M. Mac Quillan K, Gates S, Murphy J, Shell O. Admission cardiotocography: A randomized controlled trail. *Lancet*. 2003; 361: 465-70.
12. Thacker SB, Stroup D, Chang M. Continuous electronic heart rate monitoring for fetal assessment during labour (Cochrane Review). In: the Cochrane Library, Issue 4, 2001. Oxford: Update Software.

\*\*\*\*\*