

# Correlation of admission test and amniotic fluid index with mode of delivery and perinatal outcome

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## Abstract

To prove the efficiency of Admission test and Amniotic fluid index (AFI) in predicting foetal jeopardy during labour and to select the patient who require continuous monitoring. This is an prospective observational study done during November 2010 to October 2012. 200 pregnant women who were booked in this hospital were taken into study. Out of 200 patients, the incidence of non reassuring admission test with oligohydraminos was 92.3% and 88.5% underwent LSCS Perinatal mortality was 2.9%. We conclude that, in term pregnancies it is a reliable method to assess the mode of delivery and perinatal outcome.

**Key Words:** Admission test, Amniotic fluid index (AFI), LSCS, Oligohydramnios.

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## INTRODUCTION

The rate of foetal heart is subject to considerable variation which affords a fairly reliable means of judging as to the well being of the child. As a general rule, its life should be considered in danger when the heart beat fall below 100 or exceed 160 bpm. J. Whitridge Williams'. Marsac<sup>1</sup> described foetal heart sound in 1750. Fifty years later, De Kergaradec used the stethoscope for monitoring the foetal heart rate (FHR). Kennedy described the "Slowness at its (the FHR) return when a contraction is passing on" as an ominous sign. Clinical foetal heart rate monitoring (FHR) is actually an ongoing observation of foetal physiology.

Because the FHR pattern appears to assume certain characteristics under the influence of various hypoxic and non hypoxic stresses, it becomes important for the clinician to have a basic understanding of the physiology of foetal respiratory exchange and the physiologic control of the FHR<sup>2</sup>. The National Institute of Child Health and Human Development workshop (1997)<sup>3</sup> has defined acceleration based on gestational age. The acme of acceleration is 15 bpm or more above the baseline rate and the acceleration lasts 15 seconds or longer for less than 2 minutes in fetuses at or beyond 32 weeks. Before 32 weeks, accelerations are defined as having an acme 10 bpm or more for 10 seconds. Amniotic fluid serves number of important function in development of embryo and fetus. At term it measures about 600-800ml. Ultrasound assessment of amniotic fluid has important point in fetal wellbeing. Amniotic fluid index (AFI) is a semi quantitative sonographic assessment of amniotic fluid volume, which is measured as sum of the 4 quadrant deepest vertical amniotic fluid pockets in the gravid uterus which is free of umbilical cord and fetal parts<sup>4</sup>. Oligohydraminos is defined as the absence of any amniotic fluid pocket of at least 1cm in depth and polyhydramnios as presence of a pocket more than 8cm.

Its main function is protective to the fetus. During pregnancy acts as a shock absorber, protecting the fetus from possible extraneous injury. It also maintains temperature, helps in growth and free movement of fetus. During labour, it form a hydrostatic wedge which helps in dilatation of the cervix. During uterine contraction, it prevents marked interference with the placental circulation so long as the membranes remain intact<sup>5</sup>. The composition of the fluid is almost identical to a transudate of plasma. Mainly it consist of water( 98-99%), solid (1-2%).

## MATERIAL AND METHODS

This study is a prospective observational study done in the Dept of Obstetrics and Gynaecology in Bharatha Ratna Dr B.R. Ambedkar Medical Collage and Hospital, Bangaluru, over a period of 2 years from November 2010 to October 2012. About 200 term gestation womens who are in active labour admitted to labour ward taken into the study. Details of the each woman, mode of delivery, condition of the mother and the neonate were assessed at the end of each delivery.

## RESULTS

In this study, out of 200 women, mean age was 21-25 years (82 pts) constituting 49.8%. 80% of the women in the study were booked and had regular antenatal checkups. 57.5% of the women were multiparous and 42.5 % women were primi gravida. 146 (73%) women had a reactive Admission test and 54 (27%) had non-reassuring Admission test. The amniotic fluid index was less than 5 cm in 26 (13%) women. 14 (7%) women had AFI of 5- 8 cm and 160 (80%) women had AFI more than 8 cm. Meconium stained liquor present in 56(28%) and clear liquor in 144(72%). Period of gestation between 37-39weeks were 94(47%) and 40-42weeks were 106(53%). Out of 200 patients, the incidence of non reassuring admission test with oligohydraminos was 92.3% and 88.5% underwent LSCS, P value <0.001 which was significant. Perinatal mortality was 2.9%. There is statistical significance of AFI with mode of delivery. With decreasing AFI there is increasing chance of operative delivery (p value < 0.001). There is statistical significance of AFI with Admission test. Reduced AFI is more associated with non-reactive Admission test (p value <0.0001).

## DISCUSSION

Over the years, it has been recognized that foetal morbidity and mortality occurs as a consequence of labour even in patients categorized as low risk. Indeed many of the neonates require NICU admissions from low risk pregnancies. Among the various antenatal

surveillance modalities used NST is one of the easiest tests to perform and cost effective. There are considerable numbers of clinical literatures that support the use of NST in the management of labour. Oligohydramnios in the antepartum period has been associated with intrauterine growth restriction, post dated pregnancy and abnormal antepartum foetal heart rate patterns. Amniotic fluid volume is known to reduce with advancing gestational age. Out of 200 patients, the incidence of non reassuring admission test with oligohydraminos was 92.3% n a study conducted by Ingemarsson *et al* in 1986, the sensitivity of NST was found to be 23.5% and specificity was 99.4%. Though positive predictive value was 40% negative predictive value was quite high, 98.7%. In a study conducted by Aparna Hegde *et al* in 1997, the sensitivity of NST was found to be 66.6 %and specificity was 90%. 88.5% underwent LSCS, P value <0.001 which was significant. With decreasing AFI there is increasing chance of operative delivery (p value < 0.001). The no of patients who underwent LSCS in the study made by Aparna Hegde *et al.*, 65.5% in non-reassuring group. The commonest cause being fetal distress. In this study the incidence of NICU admissions among oligohydramnios and non reassuring admission test was 39.1%. But in the studies by Raj Sriya (2001) it was 88.88% and 88.2% in the study by Baron. In this study perinatal mortality was 2.9%. In the series of other authors perinatal mortality ranged from 3% to 7.7%. There is statistical significance of AFI with Admission test. Reduced AFI is more associated with non-reactive Admission test (p value <0.0001). There is statistical significance in AFI and NICU stay of the neonate. With reduced AFI there was increasing chance of NICU admission of the neonate (p value – <0.001). Study of non reassuring Admission test and oligohydraminos had sensitivity of 85.94, specificity of 93.38, positive predictive value of 85.94, negative predictive value of 93.38, accuracy of 91% and p value of < 0.001 which is statistically significant.

## CONCLUSION

Admission test with AFI can be used as an important method to diagnose foetal compromise present in low risk women in labour. Obstetricians can be more vigilant by either doing close monitoring. The above parameters shows we can detect fetal distress if present during early labour, so that delay can be avoided.

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