

INTERMITTENT FETAL HEART AUSCULTATION – CORRELATION WITH APGAR SCOREP. Anitha¹, G. Jagathyayini²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: AIM OF THE STUDY: To study the effectiveness of intermittent Fetal Heart auscultation in detecting fetal distress and its correlation with Apgar score. **STUDY DESIGN:** The Study includes 1000 women in labor with live fetuses between 29-40 weeks of gestation. All patients were monitored by intermittent fetal heart auscultation (IA) using a stethoscope or a hand held Doppler device. Monitoring was done every 15 min. in the 1st stage of labor and every 5min in the 2nd stage of labor. FHR was counted for at least 1 min. immediately following a contraction and the rate as well as rhythm was noted. Results of fetal monitoring were correlated with the Apgar score of the neonate. **PLACE OF STUDY:** The study was conducted in the department of Obstetrics and Gynecology, ESI Hospital, Sanathnagar, Hyderabad, A.P. over an 8 month period from May 2013 to December 2013 after taking permission of the ethics committee. **RESULT:** Out of the 1000 cases, 75 cases were detected to have fetal distress on auscultation (7.5%). At delivery, 16 patients (21.3%) of these 75 cases had an Apgar score less than 7. Out of the remaining 925 patients who had no clinical evidence of fetal distress, 6 of them (0.6%) delivered a neonate with an Apgar score less than 7. Statistical analysis of this data showed a sensitivity of intermittent auscultation in detecting fetal distress resulting in low Apgar score as 93.7% with a specificity of 74.3%. These results are similar to the published results of continuous Electronic Fetal Monitoring (EFM). **CONCLUSION:** Detection of fetal distress by IA is not inferior to the more invasive and expensive methods of EFM. In a country like India, where expensive monitoring gadgets are available at only a few centers, IA is an effective alternative.

KEYWORDS: Fetal Heart Rate (FHR), intermittent auscultation (IA) Electronic Fetal Monitoring (EFM).

INTRODUCTION: Detection of fetal distress during labor has always been a challenge to the obstetrician. Various intrapartum fetal monitoring techniques have been advocated with variable predictability. Electronic fetal heart monitoring to detect in- utero fetal jeopardy has been in existence for more than 3 decades. These gadgets are not universally available in most obstetric units in India. Therefore to assess the accuracy of intermittent fetal heart auscultation in identifying fetal distress, fetal outcome as predicted by Apgar score has been analyzed prospectively in 1000 women in labor. Primis in active labor and multi's with 2-3 cm dilatation were included in the study. The study has a one to one doctor patient ratio with rigidly timed auscultation schedules.

MATERIALS AND METHODS: The study includes 1000 women in labor with live fetuses between 29-40 weeks of gestation. Patients with fetal distress on initial evaluation were not included in the study. Primigravidas in active phase of labor and multiparas with 2-3 cm. of cervical dilatation were included in the study.

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All patients were monitored clinically by intermittent fetal heart auscultation using a fetoscope or a hand held doppler. Monitoring was done every 15 min. in the 1st stage of labor and every 5min in the 2nd stage of labor. FHR was counted for at least 1minute immediately following a contraction and the rate as well as rhythm was noted.⁶ Results of fetal monitoring were correlated with the Apgar score of the neonate.

PARAMETERS: The parameters for fetal distress included are

1. Persistent tachycardia > 160 /min
2. Persistent bradycardia < 110/min
3. Late decelerations
4. Variable decelerations(7)¹

RESULTS: Out of the 1000 women monitored, 350 were primigravidas and 650 were multiparas. A single patient needed between 20-66 fetal heart auscultations. Out of the 1000 cases, 75 cases were detected to have fetal distress on auscultation (7.5%). In 23 cases (30.6%) there was meconium stained liquor along with fetal distress. Unless delivery was imminent, those cases were delivered by Emergency caesarean section or Forceps application depending on the cervical dilatation and station of the presenting part.

At delivery, 16 patients (21.3%) of these 75 had an Apgar score less than 7.

Out of the remaining 925 patients who had no clinical evidence of fetal distress, 6 of them (0.6%) delivered a neonate with an Apgar score less than 7. (n= 1000)

Clinical diagnosis	No.	Fetal outcome Apgar <7
Fetal distress	75 cases (7.5%)	16 cases (21. 3%)
No evidence of fetal distress clinically	925 cases (92.5%)	6 cases (0.65)

TABLE – 1: INTERMITTENT FETAL HEART AUSCULTATION CORRELATION WITH APGAR SCORE

Statistical analysis of this data showed a sensitivity of intermittent auscultation in detecting fetal distress resulting in low Apgar score as 93.7% with a specificity of 74.3%. (n=75)

Abnormality	No. of cases	Percentage
1. Variable deceleration	30 cases	40%
2. Late deceleration	19 Cases	25.3%
3. Bradycardia	15 Cases	20%
4. Tachycardia	11 Cases	14.6%

TABLE – 2: TYPE OF FETAL HEART ABNORMALITY

DISCUSSION: The main objective of intrapartum fetal monitoring is to identify the fetus at risk of an adverse outcome, based on our ability to understand how the fetus reacts to stress before it becomes compromised and to undertake timely interventions. Although a majority of congenital neurological handicaps are not related to intrapartum events, intrapartum hypoxia continues to be responsible for a proportion of these handicaps and for a significant number of perinatal deaths even in the developed world.¹ According to the most recent perinatal mortality report for England and Wales

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(CEMACH 2008) 260 still births and 211 neonatal deaths in the last triennium were a direct result of intrapartum causes.²

Intrapartum fetal heart rate (FHR) monitoring is done either by intermittent auscultation (IA) or Electronic Fetal Monitoring (EFM). IA is done with a Pinard fetoscope or with a hand held Doppler. A systematic review of recent trials comparing IA with EFM (Alfirevic et al 2006) has shown that woman with IA were less likely to have caesarean sections & instrumental vaginal births for abnormal FHR patterns.^{3,4} However, these babies were more likely to have neonatal seizures. There was no difference in the perinatal mortality or the subsequent incidence of cerebral palsy.

There were great expectations when EFM was first introduced. But by the end of 1970's questions about the efficacy and costs of EFM were being voiced.⁵ Thacker and Associates identified 12 randomized clinical Trials of EFM from 1966 to 1994. There were 58, 624 total pregnancies included in these studies. The authors concluded that the benefits claimed for EFM are clearly more modest than were believed and appear to be primarily in the prevention of neonatal seizures. Long term implication of this outcome; however appear less serious than once believed.⁴

Abnormal neurological consequences were not consistently higher among children monitored by IA compared with EFM. The authors concurred with the position of American College of obstetrics & Gynecology on intrapartum surveillance.

Surveillance	Low-Risk Pregnancies	High-Risk pregnancies
Acceptable methods		
Intermittent auscultation	Yes	Yes ^a
Continuous electronic monitoring (internal or external)	Yes	Yes ^b
Evaluation intervals		
First-Stage labor (active)	30 min	15 min ^{a,b}
Second –stage labor	15 min	5 min ^{a,c}

TABLE 18.7. GUIDELINES FOR METHODS OF INTRAPARTUM FETAL HEART RATE MONITORING

^a Preferably before, during, and after a uterine contraction.

^b Includes tracing evaluation and charting at least every 15 minutes.

^c Tracing should be evaluated at least every 5 minutes.

From the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists (2007).

There are several reasons why EFM did not meet the high expectations. One fallacious assumption is that fetal distress is a slowly developing phenomenon and that electronic monitoring makes possible early detection of the compromise fetus. Within the past 20 years it is being increasingly realized that most damaged fetuses suffered injury even before arrival to the labor ward. The term “fetal monitor” led to expectation that all dead and damaged neonates were preventable. This led to increased litigation in obstetrics.^{6,7}

FHR monitoring either with EFM or IA has very high sensitivity but low specificity rate. With the very high costs involved with EFM and higher number of caesarean section rates, IA is recommended in low resource settings.

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CONCLUSION: Detection of fetal distress by intermittent auscultation of fetal heart is not inferior to more invasive and expensive techniques of electronic fetal heart rate monitoring. In a country like India, where expensive monitoring gadgets are available at only a few centres, intermittent auscultation is an effective alternative. Thus in our present study of 1000 cases where a 1:1 patient - doctor ratio was maintained, and auscultation was done every 15 min in first-stage of labor and after every alternate contraction in the second stage of labor, we could get a sensitivity rate of 93.7% and a specificity rate of 74.3%.

These results are similar to the published results of continuous electronic fetal monitoring. Hence centres without electronic fetal heart monitors are not at a disadvantage if intermittent auscultation is done properly as per recommendations.

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