## **ORIGINAL ARTICLE**

# Fetal Outcome with Abnormal Intrapartum Cardiotocography

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## ABSTRACT

Objective: To record fetal outcome in cases presenting with abnormal intrapartum cardiotocography.

**Methodology:** This study was conducted at Obstet & Gynaecol Department (Unit-III) of Services Hospital, Lahore. We enrolled 230 cases with age range 20-40 yrs at term (37-40 gestational weeks), abnormal cardiotocography (CTG) trace in labour and cephalic presentation whereas all cases with congenital abnormalities, malpresentation, multiple gestations and those having history of medical disorders e.g. diabetes mellitus, hypertension, asthma effecting fetal outcome, hypertension and antepartum haemorrhage were excluded from the trial. All cases with abnormal trace were kept in left lateral position and CTG was repeated after 30 minutes of inhalation of oxygen and hydration. The decision of mode of delivery was taken considering clinical picture and CTG. The followup of neonates for one week was done.

**Results:** The mean age was  $29.8\pm6.1$  years, Apgar score was <7 at 5 min in 36.9%(n=85), out of which 31.3%(n=72) were admitted in nursery, perinatal mortality was recorded in 16.5%(n=38), 29.1%(n=67) cases had SVD, 27.9%(n=64) were delivered with the help of instruments and 43%(n=99) were delivered with emergency cesareans section.

**Conclusion:** We concluded that CTG is a simple and non-invasive test for early detection of fetal hypoxia and motoring while labour is in progress.

Keywords: Cardiotocography, Apgar score, mode of delivery

# INTRODUCTION

Cardiotocography (CTG) also known as electronic fetal monitoring is helpful in recording fetal heart rate changes and their temporal relationship to uterine contractions.<sup>1</sup> It has a significant role in fetal health monitoring.<sup>2</sup> As hypoxia during labour may pose a significant threat to the fetus leading to neurological damage and intrapartum mortality, however, intrapartum monitoring is essential to reduce any morbidity and mortality.<sup>3</sup>

The rate of fetal hpyoxia related mortality and morbidity is variant and reaches 33 to 1000 alive in neonates in developing world.<sup>4</sup> Widespread use of electronic fetal monitoring is helpful to reduce the perinatal mortality. Abnormal fetal heart rate (FHR) are 2.3 folds higher in neonates with cerebral palsy and 6.7 times common in perinatal mortality.<sup>5</sup>

Reactive CTG reassures fetal health. More than 40% of fetuses may show abnormal traces/non-reassuring and only 60-70% of the cases are indicative of fetal hpoxia.<sup>6</sup> The studies showing deceleration in CTG is an important and sensitive parameter to point out fetal hypoxia.<sup>7-8</sup> However, accurate CTG interpretation is essential and important for recognition of fetuses showing pathological CTG in labour that implies hpyoxia.<sup>9</sup>

Previously, <7 Apgar score at 5 mins was recorded in 18.8% cases, 71% of neonates required NICU admission for >24 hrs and perinatal death in 28.5% had abnormal CTG.<sup>10</sup>

Considering above, we planned this study to record fetal outcome with abnormal intrapartum cardiotocography so that accurate identification of fetal hypoxia by using CTG may improve the standard of intrapartum fetal monitoring and reduce the risk of morbidity and mortality.

## METHODOLOGY

This study was conducted at Obstet & Gynaecol Department (Unit-III) of Services Hospital, Lahore. We enrolled 230 cases with age range 20-40 yrs at term (37-40 gestational weeks), abnormal cardiotocography (CTG) trace in labour and cephalic presentation whereas all cases with congenital abnormalities, malpresentation, multiple gestations and those having history of medical disorders e.g. diabetes mellitus, hypertension, asthma effecting fetal outcome, hypertension and antepartum haemorrhage were excluded from the trial. All cases with abnormal trace were kept in left lateral position and CTG was repeated after 30 minutes of inhalation of oxygen and hydration. The decision of mode of delivery was taken considering clinical picture and CTG. The followup of neonates for one week was done. SPSS was used for data analysis.

## RESULTS

The maternal age ranged from 20-40 years, mean age was  $29.8\pm6.1$  years, 43.4%(n=100) were between 20-25 yrs, 33.0%(n=76) were between 26-30 yrs, 17.9%(n=41) had 31-35 yrs and 5.65%(n=13) were between 36-40 yrs of age.

Mean gestational age was  $39.1\pm4.2$  weeks, 54%(n=124) were primigravida and 46%(n=106) were multigravida.

Of 230 cases, 29.1%(n=67) had spontaneous vaginal delivery, 27.9%(n=64) instrumental delivery and 43%(n=99) cases were delivered through emergency cesarean section. (Table No. 1)

Apgar score was <7 at 5 mins in 36.9%(n=85) and of 72 cases 31.3%(n=72) were admitted in NICU, perinatal mortality was recorded in 16.5%(n=38). (Table No. 2)

Table 1: Mode of delivery (n=230)

Mode of delivery	No. of patients	%
Spontaneous vaginal delivery	67	29.1
Instrumental delivery	64	27.9
Cesarean section	99	43
Total	230	100

Table 2: Fetal outcome (n=230)

Mode of delivery	No. of patients	%
Apgar score <u>&lt;</u> 7	85	36.9
Admission in nursery	72	31.3
Perinatal mortality	38	16.5

#### DISCUSSION

CTG is a continuous recorded of fetal heart rate obtained through ultrasound transducer placed on maternal abdomen. CTG records simultaneous fetal heart rate, movements and uterine contractions to detect hypoxia predominantly in cases with higher risk of complications.<sup>11</sup>

Normal CTG has a higher predictive accuracy of normal fetal outcome than those with abnormal CTG and abnormal fetal outcome.<sup>12</sup>

In this study, we observed fetal outcome in patients with abnormal intrapartum CTG. This is in agreement with a study of Tasnim et al<sup>13</sup> who revealed predictive accuracy of intrapartum CTG for fetal base status at birth.

The fetal outcome of our study is comparable with another study by Sultana et al<sup>12</sup> who compared normal and abnormal CTG in with perinatal outcome.

In US medicolegal climate requires obstetricians to integrade continuous intrapartum surveillance in pregnant laboring females despite evidence of no neonatal benefits.<sup>14</sup>

Alfirevic et al concluded that continuous CTG during labour period is associated with a reduced risk of neonatal seizures, however, no differences in cerebral palsy (CP), neonatal mortality or anyother standard measures of neonatal well-being. Therefore, continuous CTG is associated with a higher cesarean section and instrumental vaginal birth.<sup>1</sup>

Inter-observer variation in interpretation of abnormal CTG readings is also common and the recommendations are wide for intervention. Palomaki et al is of the view that for improving reliability, uniformity of classification and standardized training in cardiotocography interpretatin are required, as well as incrased use of computerized CTG.<sup>15</sup>

Fawole et al in Nigeria revealed that post-datism is commonly associated with a non-reactive test findings and women with non-reactive CTG are 2 folds likely to be delivered by emergency cesarean section as compared to those with reactive findings.<sup>16</sup>

Sheikh et al in a local study is of the view that no significant association is found between pathological CTG, fetal apgar score and acidosis, if alone use of pathological trace for fetal well-being assessment.<sup>10</sup>

Our findings regarding mode of delivery are in agreement wtih Butterwegge,<sup>17</sup>.

#### CONCLUSION

We concluded that normal pattern of CTG is highly reassuring regarding fetal condition. However, predictive value of abnormal pattern is low and weak while assessing Apgar score. The use of CTG has been associated with increase in intervention in labour especially cesarean section without clear evidence of benefit. The interpretation of abnormal CTG needs uniformed classfication and standrized training however, fetal blood sampling is a useful tool to reduce unnecessary intervention.

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