Original Article

Perinatal Outcome in Women Undergoing Emergency C-Section Secondary to Presumed Fetal Distress on CTG

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Abstract

Objective: To determine the perinatal outcome in women undergoing emergency C section for presumed fetal distress diagnosed on CTG in term of frequency of birth asphyxia

Methodology: This was a Descriptive case series. The study was completed in six months in Department of Obstetrics and Gynecology, Unit-2 Holy family hospital Rawalpindi. A total of 110 patients presenting at term with singleton pregnancy had emergency C-Section with persistent non-reassuring CTG were included in this study. The data of each patient was recorded in pre-design proforma. All collected data was entered and analyzed using SPSS version 25.0.

Results: Perinatal outcome in term of birth asphyxia in women who underwent emergency C-section for fetal distress at term was observed in 24.55% (27/110) cases.

Conclusion: Perinatal outcome in term of birth asphyxia in women who underwent emergency C-section for presumed fetal distress is not too high. Therefore, this is advisable that diagnosis of fetal distress should be made with great care and should not be based on a single parameter thus eliminating the risk of overdoing caesareans for jeopardized fetus.

Key Words: *Fetal distress, Birth asphyxia, Emergency C section*

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Introduction

Fetal distress is a condition in which fetal physiology is affected due to hypoxia so as to make death or permanent neurological injury probability within a relatively short period of time.[1] Fetal distress is a broad term that encompasses different of pathogenesis affecting the fetus, including chronic hypoxia leading to metabolic acidosis, mechanical trauma (excessive head compression), hyperthermia, meconium aspiration, and sepsis.[2] Labour is stressful event for the fetus but is well tolerated by most. However, in some infants stress of labour in terms of metabolic acidosis can lead to hypoxic ischemic encephalopathy.[3] Such results are not limited to high risk pregnancies but can also occur in about 50% of low risk pregnancies.[4] Thus, an intra-partum monitoring tool with high accuracy is required to ensure fetal well-being in labour.[5] Fetal distress during labour can be pick up by various means, i.e. intermittent auscultation with pinard stethoscope, CTG, fetal blood sampling, colour of liquor and biophysical profile.[6] CTG is the worldwide method of choice for fetal surveillance during labour.[7] However, CTG shows many false positive results and without fetal blood sampling, it increases operative deliveries without improvement in fetal outcome.[8] Suspected fetal distress detected by cardiotocography (CTG) has been most common indication for cesarean section for the past few decades. Many fetuses show heart rate changes without being adversely affected, and CTG has been criticised to create an unnecessary high rate of operative deliveries. Similarly meconium staining of the amniotic fluid is not always associated with ill infant.[3] It is estimated that 5 to 20% fetus pass

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meconium in utero, only 5 to 6% cause fetal distress.[4]

The Caesarean section delivery rate is increasing in many developing countries, and more than 70% C-sections are done for fetal distress.[9] The efficacy of continuous heart rate monitoring by analyzing the case of C-section for non-reassuring fetal heart in labour detected by CTG, abnormal biophysical profile and meconium staining of liquor and correlating these cases perinatal outcome in term of APGAR score and acid base status at birth.[7] In our demographic area there is very high rate of C-section done for presumed fetal distress on CTG.

Methodology

This was a descriptive case series. Females meeting inclusion criteria were enrolled through department of Obstetrics and Gynecology, Unit-2 Holy Family Hospital, Rawalpindi. A non-probability purposive sampling technique was used. All women with singleton pregnancies of greater than 36 weeks gestation and cephalic presentation who underwent emergency caesarean section due to persistent non-reassuring CTG, and showed no improvement to intrauterine resuscitative measures (oxygen inhalation , intravenous hydration, left lateral position, and stopping of oxytocin drip) , irrespective of presence or absence of meconium were recruited in the study. Informed consent was taken from the patient. Cases with eclampsia, fetal anomalies, antepartum hemorrhage, and chronic maternal medical disorders (cardiac. respiratory or renal disease) were excluded. Baby was assessed by using the Apgar score. The baby was shifted to NICU if required. The data of each patient was recorded in pre-designed proforma.

The data was analyzed by SPSS 25 version software. Descriptive analysis was done to calculate qualitative and quantitative variables. For qualitative variables frequency and percentage were computed for birth asphyxia. For quantitative variables like age, gestational age, parity, and APGAR score we calculated mean and SD ratios. Stratification was done to control effect modifies like age, gestational age and parity to observe an outcome. A Chi-square test was applied to compare the rate of birth asphyxia among age groups, gestational age, and parity of the women. P<0.05 was considered as significant.

Results

A total of 110 patients presenting at term with singleton pregnancy who had emergency C-section due to persistent non-reassuring CTG were included. Age distribution of the patient is presented in figure 1. The mean age, gestational age of the patients was 30.04±5.58 years and 38.63±1.31 week respectively. (Figure 2) Similarly mean parity of women and Apgar score of the baby is given in table III. Out of 110 women, 29(26.36%) had primi parity, 10(9.09%) had no parity and 71(64.55%) had multi parity.

Table I: Descriptive Statistics of Study Patients (n=110)

Statistics		Age (Years)	Gestational Age (Weeks)	Parity	Apgar Score
Mean		30.04	38.63	2.16	7.28
95% Confidence Interval for Mean	Lower Bound	28.98	38.38	1.88	6.99
	Upper Bound	31.09	38.88	2.44	7.58
Median		30	38	2	8
Std. Deviation		5.58	1.31	1.48	1.55
Minimum		20	37	0	3
Maximum		40	41	6	10
Inter quartile Range		9	2	2	1

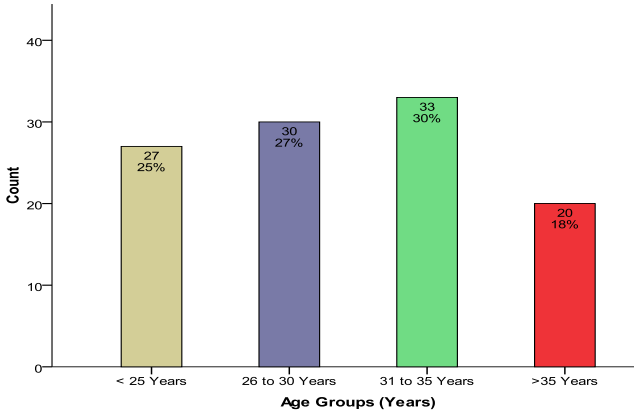

Figure 1: Age Distribution of the Patients (n=110)

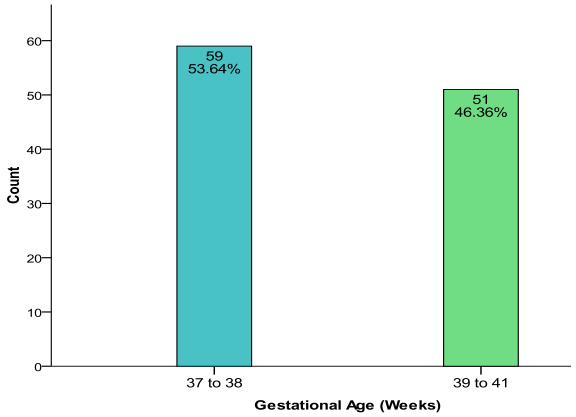

Figure 2. Gestational age of the women (n=110)

Table II: Perinatal Outcome in Term of Frequency of Birth Asphyxia in Women Undergoing Emergency C Section For Presumed Fetal Distress At Term With Respect To Age Groups

Age Groups (Years)	Birth Asphyxia		Total
	Yes n=27	No n=83	
≤25 Years	9(33.3%)	18(66.7%)	27
26 to 30 Years	7(23.3%)	23(76.7%)	30
31 to 35 Years	7(21.2%)	26(78.8%)	33
>35 Years	4(20%)	16(80%)	20
Chi-Square=1.57; p=0.66			

Table III : Perinatal outcome in term of frequency of birth asphyxia in women undergoing emergency c section for fetal distress at term with respect to Gestational age

Gestational Age Groups (Weeks)	Birth Asphyxia		Total
	Yes n=27	No n=83	
37 to 38 Weeks	11(18.6%)	48(81.4%)	59
39 to 41 Weeks	16(31.4%)	35(68.6%)	51
Chi-Square=1.57; p=0.66			

Table IV: Perinatal outcome in term of frequency of birth asphyxia in women undergoing emergency c section for fetal distress at term with respect to Parity.

Parity	Birth Asphyxia		Total
	Yes n=27	No n=83	
Nulli Para	3(30%)	7(70%)	10
Primi Para	5(17.2%)	24(82.8%)	29
Multi Para	19(26.8%)	52(73.2%)	71
Chi-Square=1.18; p=0.55			

Perinatal outcome in term of birth asphyxia in women underwent emergency C-section for fetal distress at term was observed in 24.55% (27/110) cases. Rate of birth asphyxia was not significant among different age groups (p=0.66) as shown in table 4. Similarly, rate of birth asphyxia was also insignificant between gestational age groups and parity as shown in table 5 and 6 respectively.

Discussion

Suspected fetal distress detected by cardiotocography (CTG) has been the most common indication for caesarean section (CS) for the past few decades. Many fetuses show heart rate changes without being adversely affected, and CTG has been criticized to create an unnecessary high rate of operative deliveries.[8] Therefore there is a need to know which fetal heart abnormalities may lead to adverse neonatal outcome. Another important issue is the decision to delivery (DD) interval for emergency CS after fetal distress is diagnosed. American College of Obstructions and Gynecologists (ACOG) in 1988 recommended that this time interval should be ≤ 30 minutes.[9] However developing countries are characterized by delays in handling of obstetric emergencies.[9,10] and most delays occur in transferring the patient to the operation theatre and achieving effective anaesthesia.[10] Recent studies have doubted not only the practicability of this 30 minutes D-D interval but also the proposed beneficial effect on perinatal outcome.[11]

In present study the mean age, gestational age of the patients was 30.04±5.58 years and 38.63±1.31 week respectively. Out of 110 women, 29(26.36%) had primi parity, 10(9.09%) had no parity and 71(64.55%) had multi parity.

In our study, perinatal outcome in term of birth asphyxia in women who underwent emergency C-section for fetal distress at term was observed in 24.55% (27/110) cases. In Roy et al study 33 (15.2%) babies the 5 minutes Apgar score was <7 out of which 13 (5.9%) babies had cord þH <7.10 In this study 6.8% patients underwent emergency L.S.C .S for fetal distress out of which 15.2% had birth asphyxia rest 84.7% neonates were healthy.[9]

Various randomized controlled trials showed that addition of ST analysis to conventional CTG improved the specificity of intra partum monitoring and thereby reducing the rate of operative deliveries for fetal distress. Recently Vayssiere et al.[12] in 2007 reported that, in a population with abnormal fetal heart rate in labor ST-segment analysis (STAN) sensitivity is moderate (almost 40%) for predicting pH = 7.15 and

better (almost 60%) for severe acidosis (pH <7.05). Since the rate of cesarean section done for suspected fetal distress is increasing, it is important to monitor the D-D interval in evaluating the quality of maternity care and to find out the ideal D-D interval time for better neonatal outcome. The ACOG Committee's recommendation4 of 30 minutes D-D interval time for cesarean section for fetal distress is arbitrary. Moreover, this recommendation does not appear to be an evidence based rule [13], but has the approval of respected authorities including medicolegal bodies.[13] Chauhan et al [14] in his study of 117 patients of cesarean section for fetal distress concluded that, although a cesarean section with a D-D interval ≤ 30 minutes is a desirable goal, failure to achieve this goal is not associated with a measurable negative impact on the newborn. Bloom et al [15] in his large study of 2808 patients of emergency cesarean section showed that when the D-D interval was more than 30 minutes, 95% of these neonate did not experience adverse outcome. Similar evidence that "achieving the 30 minute standard does not benefit the infant" has been reported in other studies.[16]

The incidence of asphyxia was higher in these patients where a crash attitude was followed to perform CS early. One possible explanation for increased NICU admission in this group is that a crash attitude to shorten the D-D interval may in fact provoke increased maternal catecholamine release, which may cause reduced perfusion of the placental bed leading to fetal acidosis. [17]

Pathological trace was found to have a high predictive value for fetal acidosis (100%), justifying the need for urgent intervention. The figure is much higher than that quoted by Maclachan, Sheikh and Pallintova as 38%, 58% and 36.2% respectively.[18] The probable reason for these differences are inter observer bias in the visual interpretation of tracings and a variable time interval between diagnosis and delivery .The former issue may be resolved through the institution of computerized CTG while the latter may be dealt with through minimization of decision-delivery interval, the upper cut off limit of which has been set at 30 minutes.[19]

Conclusion

Perinatal outcome in term of birth asphyxia in women underwent emergency C-section for fetal distress is not too high so the diagnosis of fetal distress should be made with great care and should not be based on a single parameter thus eliminating the risk of undue caesareans for jeopardized fetus.

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