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Research Article

Intrapartum Analysis of Lower Segment Cesarean Section Undertaken for Clinically Diagnosed Foetal Distress

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Abstract

Abstract: Clinically diagnosed foetal distress (non reassuring foetal heart rate, meconium stained liquor, altered foetal movement) is one of the leading cause of cesarean section. This study was done for evaluation and correlation of intraoperative condition and neonatal status associated with clinically diagnosed foetal distress.

Methodology: It was a hospital based observational study done in tertiary care hospital in women with clinically diagnosed foetal distress - non reassuring foetal heart rate, meconium stained liquor, altered foetal movement were included in study a details history was taken and intraoperative factors- Liquor (amount and colour), Placenta, Cord were noted. Detailed record of neonatal status was recorded. All data was collected and analyzed.

Result: Among 139 women with clinically diagnosed foetal distress 51% had not reassuring foetal heart rate, 21.5% had meconium Stained liquor, 27.3% had altered foetal movement. Evaluation showed 9.8% had meconium stained liquor 45% had nuchal cord, 8.4% had abruptio placenta in non reassuring foetal heart rate cases. 31.5% had nuchal cord, 13.1% liquor was absent and in 2.6% liquor was meconium stained in altered foetal movements cases. Nuchal cord was present in 6.6% cases with meconium stained liquor. Apgar score of <7/10 and birth weight <2.5 kg present in 10.7% &23% cases respectively. Average neonatal intensive care unit stay was of 7 days and among them meconium aspiration syndrome were maximum.

Conclusion: Careful evaluation should be done for clinically diagnosed Meconium Stained Liquor, altered foetal movement & nonreassuring foetal heartrate. Over diagnosis of foetal distress & misinterpretation of foetal heartrate increased the hospital burden of cesarean section. This points the need to confirm foetal distress diagnosed clinically with foetal blood acid base study & cardiotocography monitoring if possible or using two parameters for better reliability

Keywords: Altered Foetal Movement; Foetal distress; Meconium Stained Liquor; Non reassuring foetal heart rate; Caesarean section

Abbreviations: FHR: Foetal Heart Rate; NICU: Neonatal Intensive Care Unit

Introduction

Foetal distress is one of the leading cause of cesarean section. Assessment of fetus is by counting of the foetal heart rate (FHR) and checking for the presence of meconium in the liquor and womans daily foetal movement count. Abnormal FHR pattern, especially in the presence of meconium in the liquor, signifies foetal hypoxia and acidosis [1]. The introduction of foetal scalp blood pH estimation and electronic foetal monitoring into labour management has decreased the reliability on clinical methods, however the detection of abnormal FHR or rhythm and meconium staining of liquor still represents the best available indirect evidence of poor foetal oxygenation during labour in resource constrained settings and helps identify significant fetuses with possible early neonatal acidaemia and selecting foetuses that requires expedited delivery and supportive therapy at birth in low resource settings [2].

But, operative delivery for clinical foetal distress show that not all the babies delivered have evidence of antecedent hypoxic insult [3]. False diagnosis results in unnecessary caesarean delivery. In developing countries, caesarean section is still not preferred and is associated with significant maternal morbidity and mortality [4-6]. The compromised neonate is to be weighed against the maternal risk of caesarean delivery.

Objective

This study was done for evaluation of the accuracy and correlation of intrapartum factors and neonatal status associated with clinically diagnosed foetal distress indicating caesarean section.

Methodology

It was a hospital based observational study done in tertiary care hospital. Singleton caesarean births indicated by clinically diagnosed foetal distress over a six months period (July to December 2017) were selected for the study. The diagnosis of foetal distress was based on detection of abnormal FHR and/or rhythm (>160 or <110 beat per minute) by intermittent auscultation and/or presence of meconium stained liquor or Altered Foetal Movement. Electronic FHR monitoring, foetal blood gas or pH analysis were not available.

All neonates delivered by caesarean section were attended by a senior resident, paediatrician of the hospital. The Apgar scores were assessed at one and five minutes to assess foetal condition and response to resuscitation measures, respectively. Neonatal compromise was defined as one minute Apgar score < 7.

Detailed history was taken and liquor (amount and colour), placenta, cord were noted. Detailed record of neonatal status was recorded. All data was collected and analyzed.

Results

Mean age of the women in our study was 24.6±1.03 years ranging from 20 – 32 years. This may be because of early marriage which is still practiced in our state. (1). 57.7% women in our study were primigravida Table 1.

Table 1: Maternal and Neonatal Characteristics.

Maternal		**No. (n=139)**
1. Booking Status	Booked	125
	Unbooked	14
2. Gravidity	Primigravida	80
	>2	59
Neonatal		
1. Birth weight (in kg)	> 2.5	107
	<2.5 kg	32
2. Apgar	> 7	124
	< 7	15
3. NICU Admission Duration	< 7 days	10
	> 7 days	5
4. Deaths	Intrapartum Stillbirths	2
	Neonatal death	2

Out of 139 women diagnosed clinically as foetal distress, 51.1% had non reassuring FHS, 27.4% had altered foetal movement and 21.5% had meconium stained liquor with normal foetal heart pattern. 71 of 139 women who had non assuring foetal heart pattern, intraoperatively it was observed that 45.1% had nuchal cord, 8.4% had absent or oligohydramnios, 9.9% had meconium stained liquor and in 8.4% cases placenta was small/calcified or separated. 76.9% had birth weight of more than 2.5 kg. 1.4% had intrapartum stillbirth Table 2.

Table 2: Intraoperative Findings Of Clinically Diagnosed Foetal Distress.

Sign of Foetal Distress	**No. Of women**	**Nuchal Cord**	**Liqour Less/Nil**	**MSL**	**Placenta Abruptio/Calcified**	**NAD**
Nonreassuring FHS	71	32	6	7	6	20
Altered Foetal Movement	38	12	5	1	1	19
MSL	30	2	-	21	7	-
Total	139	46	11		14	

Table 3: Correlation of Clinical Foetal distress,Intraoperative Findings with stillbirths / NICU Admissions.

Sign of Foetal Distress	**No. Of women**	**No.of Admissions (15)**	**Nuchal Cord (2)**	**Liqour Less/Nil (1)**	**MSL (8)**	**Deaths 2 neonatal death in NICU 2 intrapartum stillbirth**
Nonreassuring FHS	71	7	-	1	4	2 neonatal death in NICU (1 intrapartum stillbirth)
Altered Foetal Movement	38	1	-	-	1	-
MSL	30	7	2	-	3	2(1 neonatal death) (1 intrapartum stillbirth)

Apgar score was <7 in 10.8% babies in our study. Only 10.7% (15/139) babies required neonatal intensive care unit (NICU) admission. In more than 50%, NICU admission was due to birth asphyxia in neonates associated with meconium passage in utero of all babies requiring NICU admission, 66.7% babies were admitted for a period of 1 to 7 days while 33.3% were admitted for more than 7days in NICU. and 1.4% had early neonatal death. These had either nonreassuring FHR or meconium stained liquor Table 3.

Discussion

This study was done due to the dilemma faced by obstetricians practising in developing countries when faced with clinical evidence of foetal distress that cannot be confirmed by other methods. The results show that 10% of the neonates delivered by caesarean section due to clinically diagnosed foetal distress did have suboptimal (< 7) Apgar scores. The relative risk of poor perinatal outcome in terms of foetal acidaemia, low Apgar score, early perinatal morbidity and or mortality in newborns with clinical foetal distress was at least twice that of newborns without foetal distress [7]. Priyadharshini. VM et al 2013 [8] Patil KP et al 2006 [9] and Vijayasree M et al 2014 [10] reported APGAR score <7 in 18.8%, 33% and 30% respectively. Vaghela HP et al 2014 [11] had only 5% neonates with APGAR score < 7. This puts some value on clinical diagnosis of foetal distress in low resource setting. However, the number of neonates with mildly decreased or normal Apgar scores at birth also suggests a review of the mode of delivery where the likely risk of caesarean birth to both mother and baby may outweigh its benefits.

Only 10.7% neonates in our study required NICU admission, however in the study done by Kumar BV et al 2015 [12], 35.8% required NICU admission and by Vaghela et al (30%) [11], Vijayasree M et al 2014 [10] (20%) and16% by Uday Rajput, Anu Jain 2013 [13]. Similar to our findings, Our study emphasizes the benefits of combining abnormal FHR with meconium staining of liquor as against singly employing either of the two for intrapartum diagnosis of foetal distress. Reduced amount of liquor along with abnormal foetal heart pattern was also an important marker of distress [12]. In our study, there was poor relation between abnormal FHR alone and immediate neonatal outcome. Use of auscultation of FHR with the stethoscope has many limitations. It cannot assess baseline variability nor can help in diagnosing decelerations with uterine contractions. Foetal tachycardia may be due to maternal fever and anxiety and not foetal acidaemia.

Passage of meconium does not have any hypoxic consequences on the foetus if the FHR is greater than 110 beats per minute. However, meconium staining of liquor together with abnormal FHR and rhythm are still good indicators of foetal jeopardy, which require expedient delivery.7There was reversal of the relationship between meconium liquor alone and severe neonatal compromise only when the consistency of meconium was separately considered [14].

A limitation of the study was the use of Apgar score to assess the neonate as it may not correlate with neonatal acidaemia. Apgar score is not universally accepted as evidence of or consequence of asphyxia. Although a low score may be evidence of hypoxia, the scores may be influenced by factors that affect infant's responsiveness, tone and respiration. Low Apgar score at one minute nevertheless suffices as an excellent indicator of infants in need of resuscitation in a setting where no other method of assessment is available [13].

Conclusion

Since many neonates delivered by caesarean section following clinical diagnosis of foetal distress were severely compromised, careful evaluation should be done for clinically diagnosed meconium stained liquor, altered foetal movement & nonreassuring FHR. These still are of value in identifying foetuses needing expedited delivery in such setting. However, over diagnosis of foetal distress & misinterpretation of foetal heart rate increases the hospital burden of cesarean section besides causing increased maternal morbidity. This points the need either to confirm foetal distress diagnosed clinically with foetal blood acid base study & cardiotocography monitoring. Where not available, combining abnormal FHR with meconium staining of liquor as against either of the two for foetal distress is more reliable.

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