

**Original Research Paper****Abnormal Fetal Movement and Nuchal Cord in Fetal Distress- A Determinant of Poor Neonatal Outcome**

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Abstract

A prospective study was conducted in Kamla Nehru Hospital, I.G.M.C, Shimla on 100 women with one or more signs of fetal distress like abnormal fetal movement perception by mother, meconium staining of amniotic fluid and fetal heart rate abnormality; out of which 4 patients had history of decreased fetal movement and 37 babies were found to be with cord entanglement around neck. Babies born with history of decreased fetal movement and cord entanglement around neck were found to be associated with asphyxia at APGAR score one and five minutes.

Introduction

Maternal reports of perception of fetal movements are perhaps the most valuable of fetal well being. Reduction or cessation of fetal movements while fetal heart sounds are still audible referred to as the movement alarm signal. This sign may be a warning of severe distress and impending fetal death and serves as an indication for immediate delivery (Pearson and Weaver, 1976¹, Sadovasky and Polishuk, 1977²). Daily fetal movement recording has been suggested as useful in evaluation of fetal life (Mathews, 1973³, Sadovasky and Yaffe, 1973⁴, Pearson and weaver, 1976¹). If there is diminution of 'kicks' to less than 10 in 12 hours, indicates failing placental function. The Cardiff count to 10 system is also a simple procedure to record the fetal movement count. In spite of various limiting factors affecting fetal movement, the daily fetal movement count is an useful non-invasive test of fetal well being by which each pregnant patient can monitor her own

fetus and helps the obstetrician to identify the "at risk" but healthy fetus.

However there is a divergence of opinion on effect of nuchal coils of cord on fetus; but Lillien, 1970⁵ reported an increased incidence of fetal distress and perinatal mortality in fetus in utero cord around the neck. APGAR score is a quick method of assessing the newborn infant (Apgar V, 1953⁶). Ease of scoring has led to its use in studies of neonatal outcome. Total score: 10, No depression: 7-10, Mild depression: 4-6, Severe depression: 0-3. The one minute APGAR score predicts the immediate neonatal outcome which determines the immediate need for resuscitation of the neonate. APGAR score at five minutes predict the long term neurological outcome which is a needful index of effective resuscitation efforts.

Material and Methods

A prospective randomized study was conducted in the department of Obstetrics and Gynaecology at

Kamla Nehru Hospital, I.G.M.C, Shimla between July 2002 – June 2003. Out of total delivery of 3912 during this period; 100 patients of full term pregnancy in labour showing one or more clinical signs of fetal distress in which 4 patients had history of decreased fetal movements were selected for the study. After delivery out of 100, 37 babies were found to have cord around the neck and neonatal outcome was predicted on the basis of APGAR score at one and five minutes.

Selection of the Cases

Patients with full term (37-42 weeks) normal pregnancy with cephalic presentation in labour who had shown some alteration in fetal heart rate or rhythm, decrease or loss of fetal movements and meconium staining of amniotic liquor on spontaneous or artificial rupture of membrane were selected for the study. Pregnancy with antenatal complications like pregnancy induced hypertension, twin pregnancy, diabetes mellitus, severe anaemia, Rh incompatibility, ante partum haemorrhage and post maturity were excluded from the study. In all cases following observations were made and recorded in the case proforma. In each case a detailed obstetric and menstrual history was taken. Patients were asked about duration of labour pain, history of any bleeding or leakage per vaginum and color of liquor and any decrease or loss of fetal movements. A detailed general, physical, systemic and obstetrical examination was done and findings were noted.

Observations

Table-1: Abnormal Fetal Movement (AFM)-Distribution and relationship to fetal outcome

Fetal movement	Total=4	At one minute			At five minute		
		Group I	Group II	Group III	Group I	Group II	Group III
Decreased FM	4	2(50%)	1(25%)	1(25%)	3(75%)	1(25%)	0
Loss of FM	-	-	-	-	-	-	-
Excessive FM	-	-	-	-	-	-	-

Table-1 demonstrates; 50% (2 patients) at one minute and 75% (3 patients) at 5 minutes had

Labour was monitored partographically. Out of 100 patients, 32 patients were monitored by cardiotocograph. Hb%, blood grouping and Rh typing and urine for albumin and sugar were done in each patient. Duration of first and second stage of labour recorded in cases on Normal Vaginal Delivery (NVD), low forcep delivery and in ventouse application. If delivery was not eminent and clinical monitoring showed ominous signs of fetal distress, patients were taken up for caesarean section. Umbilical cord was examined for its length, presence of knots and nicks, number of coils of cord encircling the neck and for number of umbilical vessels. Placenta was weighed and examined grossly for size, presence of infarcts, calcifications or any retroplacental clot. Neonates were examined for APGAR score at one and five minutes, birth weight, gestational age, any congenital malformation and meconium staining of cord, nails, skin and cornea and any evidence of meconium aspiration syndrome. According to APGAR score at one and five minutes neonates were classified into 3 categories:- 1. APGAR score: 7-10; healthy, no asphyxia. 2. APGAR score: 4-6; mild asphyxia. 3. APGAR score: 0-3; severe asphyxia and still birth. Asphyxiated babies were admitted to neonatal intensive care unit after primary resuscitative measures and followed up as long as the neonate was in hospital.

Statistics: Observations were recorded and analysed using Paired Students t-test.

babies with APGAR score ≥ 7 . 50% (2 patients) at one minute and 25% (1 patient) at five minutes

APGAR had asphyxiated babies of which one neonatal death occurred (Admission test non reactive). History of decreased fetal movement

with non reactive Admission test showed significantly poor neonatal outcome.

Table-2: Number of Cord Entanglement-Distribution and relation to Neonatal Outcome

Entanglement	Total=37	At one minute			At five minute		
		Group I	Group II	Group III	Group I	Group II	Group III
One	20(54.05%)	3(15%)	16(80%)	1(5%)	18(90%)	2(10%)	0
Two	13(35.14%)	1(7.69%)	8(61.53%)	4(30.77%)	7(53.85%)	5(38.46%)	1(7.69%)
Three	3(8.10%)	0	2(66.67%)	1(33.33%)	2(66.67%)	1(33.33%)	0
More than three	1(2.70%)	1	0	0	1	0	0

Paired student's t-test:

Group I : t = -1.73, p=0.182
Group II: t=1.39, p=0.258
Group III: t= 1.99, p=0.141

Table-2 shows; 85% (17 patients) at one minute and only 10%(2 patients) at five minute with entanglement of cord. Once around the neck had asphyxiated babies. With cord entanglement twice around the neck; 92.3% (12 patients) at one minute and 46.15% (6 patients) at five minutes had asphyxiated babies. Patients with cord entanglement Thrice around the neck; 100% (3 patients) at one minute and 33% (1 patient) at five minutes had asphyxiated babies. Babies with cord entanglement around the neck were found to be asphyxiated at birth more with Twice around the neck.

Discussion

• Correlation of decreased fetal movement and neonatal outcome

In Table-1; 4 patients had history of decreased fetal movement. 50% (2 patients) at one minute and 25%(1 patient) at one minute APGAR score has asphyxiated babies of which 1 neonatal death occurred in whom movement alarm signal was present for >13hours and Admission test was non reactive. The study's result is in accordance with the findings of Mathews 1973³, Sadovasky and Polishuk 1977² and Navot et al 1983⁷.

Development of this sign indicates impending fetal death and is an indication of immediate

delivery of fetus. Our patient was also delivered by caesarean section but baby died after 2hours 55minutes due to severe birth asphyxia+ meconium aspiration syndrome. The findings are similar to the findings of Navot et al 1983⁷ in which 26.2% perinatal mortality (present study 25%) occurred in non reactive NST group who had felt decreased fetal movement.

• Correlation of Entanglement of Cord around neck and Neonatal Outcome

In Table-2; 37 patients had cord entanglement around neck. 20 patients had one loop, 13 patients had 2 loops, 3 patients had 3 loops and 1 patient had more than 3 loops around the neck. Most patients were associated with meconium stained amniotic liquor with fetal heart rate abnormality. With cord around the neck twice; 92.3% (12 patients) at one minute and 46.15% (6 patients) at five minutes had asphyxiated babies. Out of which 2 neonatal death occurred supporting the findings of Lillien 1970⁵ i.e. a tight cord around the neck is a risk factor for intrapartum death. With cord around the neck thrice;100% (3 patients) at one minute and 33% (1 patient) at five minutes had asphyxiated babies. Out of which one neonatal death occurred which is having similarity with Harrar and Buchman 1957⁸, Fisher 1964⁹, Lillien 1970⁵; as they have reported an increased

incidence of fetal distress and perinatal mortality in fetus in utero cord around the neck. The present study is almost similar to the study of Puri et al 1989¹⁰.

Conclusion

It can be concluded from the study that history of decreased fetal movement and umbilical cord entanglement around the neck in patient with fetal distress resulted into increase in asphyxiated babies at one and five minutes APGAR score and contributing to two neonatal death pointing to a poor neonatal outcome.

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