FREQUENCY OF NUCHAL CORD AT DELIVERY BETWEEN 36 TO 41 WEEKS AND TO ASSESS THE PERINATAL OUTCOME

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ABSTRACT

Objective: To determine the frequency of nuchal cord at delivery between 36 to 41 weeks and to assess the perinatal outcome.

Methodology: This retrospective, comparative study was carried out from January 2012 to June 2012 at Peshawar Health Center, Peshawar. Out of the total 116 deliveries, 56 cases were selected as study group according to the inclusion criteria and the remaining cases (n = 60) which did not have nuchal cord served as control group. Variables like meconium staining of liquor, transient fetal heart rate (FHR) irregularities, fetal distress, instrumental delivery rate, caesarean section rate, apgar score <7 at 1 minute and 5 minute and admission to neonatal unit were taken as outcome variables. Outcome variables between the study group and control group were compared.

Results: Out of the 116 women delivered after 36 weeks of gestation, 56 cases had nuchal cord making its incidence of 48.28% of all the deliveries. The incidence of single loop of cord around neck was 87.5% while multiple loops of cord around neck were 12.5%. Rate of caesarean section in study group (28.6%) was nearly equal to control group (25%), however the rate of instrumental deliveries was higher in study group 35.7% (n=20) than control group 23.3% (n=14). Transient FHR irregularities were more common in study group. Similarly meconium staining of the liquor was also more in study group (32%) than in control group (15%). Apgar score <7 at 01 minute was found in 16% (n=9) of newborn in study group and nil in control group. Five minute apgar score < 7 in both study and control group was nil. Neonatal unit admission was needed by 8.9% (n=5) in study group and nil in control group.

Conclusion: Nuchal cords occur commonly, but are rarely associated with significant neonatal morbidity or mortality.

Key Words: Nuchal cord, Perinatal outcome, Apgar score,

INTRODUCTION:

A nuchal cord occurs when the umbilical cord becomes wrapped 360 degrees around the fetal neck. Nuchal cords are very common, with prevalence rates ranging between 6% to 37%[1] of which 3.7% have two or more loops. The prevalence increases with the duration of pregnancy, from 5.8% at 20 weeks gestation up to 29% at 42 weeks. Most nuchal cords (>80%) are wrapped right to left around the fetal neck. Most torsion (>70%) is counterclockwise (sinestral, left-handed) away from the fetus. This suggests the fetus maneuvers in the same direction most of the time when stimulated. The fetus can develop entanglement and escape from it. It is possible for a twenty week fetus with a triple nuchal cord to free itself of the loops by twenty eight weeks.

Several studies have been done to analyze deliveries with nuchal cord with differing results[2-7]. Although nuchal cord is often blamed for most of the problems encountered during delivery, the actual significance that nuchal cord has on the intrapartum perinatal outcome is controversial[7]. Some authors[8-10] reported that the nuchal cord is associated with an increased risk of fetal distress, meconium- stained amniotic fluid and lower Apgar score whereas others did not[3,11,12] find an increased frequency of non-reassuring fetal heart rate patterns, instrumental vaginal delivery and low Apgar score in cases with nuchal cord. Ogueh et al[13], Sheiner et al[6] reported nuchal cord loops are associated with induction of labor, slow progress of labor, non-reassuring fetal heart pattern, but no significant association with perinatal mortality. Conversely, Ghi T et al in their study mentioned that nuchal cord does not seem to increase the risk of induction failure, fetal distress and adverse perinatal outcome[14].

Does the nuchal cord really affect the outcome of delivery? Due to lack of significant data regarding the role of nuchal cord in fetal morbidity and mortality, it is a source of anxiety and frustration to both parturients and healthcare professionals[6].

The purpose of this study was to determine the frequency of nuchal cord at delivery between 36 to 41 weeks and to assess the perinatal outcome.

MATERIALS & METHOD:

This retrospective, comparative study was carried out from January 2012 to June 2012 at Peshawar Health Center, Peshawar.

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Out of the total 116 deliveries, 56 cases were selected as study group according to the inclusion criteria. All the pregnant women with singleton normal cephalic presentation between 36 and 41 completed weeks with cord around neck at the time of delivery were enrolled in the study. The remaining cases were excluded from the study after following exclusion criteria which included preterm, congenital abnormalities, non-cephalic presentation and post-dates pregnancies.

The management of the cases was done according to the hospital protocol. Their labour events like meconium staining of liquor, fetal heart rate irregularities ,mode of delivery, presence of nuchal cord and its number of loops, whether loose or tight, birth weight, sex of the baby, Apgar score at 1 minute and 5 minute and admission to neonatal unit were noted.

A nuchal cord was considered to be loose when it could be easily uncoiled before delivery of the fetal trunk. When it needed to be clamped and cut before delivery of the trunk, the nuchal cord was considered tight.

The cases with nuchal cord at the time of delivery were taken as study group and the cases which did not have nuchal cord served as control group. Variables like meconium staining of liquor, transient fetal heart rate (FHR) irregularities, fetal distress, instrumental delivery rate, caesarean section rate, Apgar score <7 at 1 minute and 5 minute and admission to neonatal unit was taken as outcome variable. Outcome variables between the study group and control group were compared.

Statistical analyses were performed using the SPSS package version 16.0. We calculated means and/or percentages for the different variables. Comparisons were done between study group and control group. Statistical signiûcance was ascertained using the chi square test. A P-value <.05 was considered to be statistically signiûcant.

RESULTS:

During the study period of Six months duration, 116 women delivered after 36 weeks of gestation. Of the total deliveries, 56 cases had nuchal cord making its incidence of 48.28% of all the deliveries. The incidence of single loop of cord around neck was 87.5% while multiple loops of cord around neck were 12.5%. Majority of the nuchal cords were loose (89.3%) and tight loops were observed in the remaining 10.7% cases. (Table-1)

Transient FHR irregularities were more common in nuchal cord group which is statistically highly significant (p=0.009). The most common fetal heart rate variation was variable deceleration specially in fe-

Table 1: Types of Nuchal Cord

Type	Number (%)
Single-loop nuchal cord	49 (87.5%)
Multi-loop nuchal cord	7 (12.5%)

tuses with multiple tight cords. Similarly presence of meconium staining of the liquor was also more in study group (32%) than in control group (15%) but statistically not significant (p=0.05). (Table-2)

Regarding mode of delivery, rate of caesarean section in study group (28.6%) was nearly equal to control group (25%), however the rate of instrumental deliveries was higher in study group 35.7% (n=20)

Table-2: Intrapartum Events in relation to Nuchal Cord

Intrapartum events	Total Number	Study Group (n = 56)	Control Group (n = 60)	p-value
Meconium staining of liquor	27	18 (32.14%)	9 (15%)	0.05
FHR irregularities	6	6 (10.7%)	Nil	0.009

than control group 23.3% (n=14).The most common indication for instrumental deliveries was prolonged 2nd stage. The role of nuchal cord over mode of delivery in both the groups was insignificant in general. (Table-3)

Neonatal outcome was analyzed by apgar score at 01 minute and 05 minute & need for neonatal admission. Apgar score less than 07 at 01 minute was present in 16% (n=9) of newborn in study group and

Table-3: Mode of Delivery in relation to Nuchal Cord

Mode of Delivery	Study Group (n = 56)	Control Group (n = 60)	p-value
Normal	20 (35.7%)	31 (51.7%)	0.189
Instrumental	20 (35.7%)	14 (23.3%)	
Caesarean section	16 (28.6%)	15 (25.0%)	

nil in control group. Five minute apgar score less than 07 in both study and control group was nil. Neonatal unit admissions was needed by 8.9% (n=5) in study group and nil in control group which is insignificant statistically (p=0.18). (Table-4)

Mean maternal age and parity in both the groups were comparable. Mean maternal age of study group was 18.67 years and in control group was 20 years.

Table 4: Apgar Score and Neonatal Unit Admissions in relation to Nuchal Cord

Apgar score	Study Group (n = 56)	Control Group (n = 60)	p-value
<7 at 1 minute	9 (16%)	Nil	0.18
<7 at 5 minute	Nil	Nil	
Neonatal unit admission	5 (8.9%)	Nil	

Primary gravida was accounted for 46.4% in study group and 26.7% in control group. Multi gravida and grand multigravida accounted 41.1% and 12.5% in study group and 58.3% and 15% in control group respectively which is not statistically significant (p=0.083).

DISCUSSION

Entanglement of umbilical cord around the fetal neck (Nuchal cord) is a common finding at Delivery[7]. Most of the nuchal cords are not associated with perinatal morbidity and mortality. In some fetuses and newborns cord around neck may cause problems, especially when the cord is tightly wrapped around the neck. A small number of studies have shown that nuchal cord can affect the outcome of delivery and may have long-term effects on the infant and but as a causative factor for stillbirth it is debatable[16,17]. A stillbirth attributed to a cord problem should have evidence of cord obstruction or circulatory compromise. Other potential causes of stillbirth need to be excluded prior to labelling cord abnormalities as the causative factor.

The incidence of nuchal cord increases with advancing gestation from 12% at 24 to 26 weeks to 37% at term[15]. The incidence of nuchal cord in this study was 48.27 % of all the deliveries after 36 weeks of gestation. It is, however, higher than the 22.85% and 33.7% reported by Schaffer et al[5] and Shresta et al[7]. This higher incidence in our study is due to small sample size. Schaffer et al[5] in their study found the incidence to be 33.7% among term deliveries and 35.1% in post term deliveries. Incidence of multiple nuchal cords (two or more entanglement) in our study was 12.5% which is comparatively higher to the study done by Schaffer et al[5].

Several studies have analyzed the effect of nuchal cord on intrapartum events and neonatal outcome with varying results.

This study found higher incidence of meconium staining of liquor in study group in comparison to control group (p = 0.05) but statistically not significant. Intrapartum FHR irregularities was more common in study group (p = 0.009). Several authors found no signiûcant difference in the rates of fetal distress between the nuchal cord group and the control group[3-5,7]. On the contrary, Sheiner et al[6] reported the signiûcantly higher rates of non-reassuring fetal heart rate in the nuchal cord group than in the control group (P<.001).

Cesarean section rate in study group was nearly equal to that of control group. This result suggested that the presence of nuchal cord does not increase the risk of cesarean section during labour. Instrumental delivery rate was also more in study group (35.7%) but statistically not significant (p = 0.189). These findings are similar to the findings of Peregrine et al[4], Schaffer et al[5], Mastrobattista et al[3].

Although the nuchal cord group had a larger percentage of infants born with Apgar score less than 7 at 1 minute (p-value = 0.001), Apgar score <7 at 5 minute and admission to neonatal unit was not significantly more which means primary neonatal adaptation is not impaired by nuchal cord compression and nuchal cord is not a major cause of fetal asphyxia. The findings are similar in the studies done by Mastrobattista et al[3], and Schaffer et al[5].

Age of the majority of patients (51.8%) was within the range of 26-35 years. Multigravida comprised 53.57% and primigravida 46.4% which simulates some other studies like Gardiner et al; but Adinma didn't find any relation of parity with nuchal cord[3].

CONCLUSION:

This study suggests that the nuchal cords occur commonly, but are rarely associated with significant neonatal morbidity or mortality. The presence of a nuchal cord per se is not found to be an indication of operative delivery. However, such patients require close monitoring during labour, preferably by continuous fetal electronic heart rate monitoring as tight and multiple nuchal loops were associated with persistent variable or late deceleration.

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