



ASSOCIATION OF NUCHAL CORD AT TIME OF DELIVERY AND PERINATAL OUTCOME

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ABSTRACT

Aim: to find out the association of intrapartum complications and perinatal outcome in pregnancies with nuchal cord and overall incidence of nuchal cord at the time of delivery.

Methods: Perinatal records of 2831 women who delivered were examined retrospectively. Results: In this study, overall incidence of nuchal cord was 26.1% and incidence of tight nuchal cord was 0.56%; 4.2% of babies with nuchal cord required resuscitation and 3.2% of babies with nuchal cord needed to be admitted to NICU. In our study, 4.2% of babies with nuchal cord required resuscitation and in total 3.2% of babies with nuchal cord needed to be admitted to NICU. Nuchal cord frequency increased from 15.6% at 36 weeks to 22.8% at 37 weeks.

Conclusions: Perinatal outcomes of pregnancies with nuchal cord were not adversely affected.

KEYWORDS : nuchal cord; perinatal outcomes

INTRODUCTION

In a book published in 1896, the author referred to a statement by Hippocrates on nuchal cord as one of the dangers of the eighth month, stating that a nuchal cord persisting until the term, "will cause suffering to the mother and either perish or born difficulties to the fetus."¹ The overall incidence of nuchal cords increases with the increase in gestational age was 6% at 20 wks GA and 29% at 42 weeks of gestation². Early research showed that babies with nuchal cord at delivery had increased incidence of fetal heart rate decelerations during labour, increased incidence of umbilical artery acidemia and a higher incidence of neonatal resuscitation and NICU admissions.³ The tight cord round-the-neck may cause cardiorespiratory and neurological problems and has been referred to as 'tCAN syndrome'(tight Cord Around the Neck Syndrome).⁴ However, several recent studies have suggested that perinatal complications do not increase with nuchal cord at delivery.⁵ Despite the research it is still not very clear whether the antenatal detection of nuchal cord near term should alter the management protocols of pregnancy, induction of labour and mode of delivery or not. In order to find out the effects of nuchal cord over pregnancy and perinatal outcome in Indian population an observational study over a period of 3 years in tertiary care hospital was carried out.

AIMS & OBJECTIVES:

- (1) to evaluate the effects of nuchal cord on mode of delivery
- (2) to evaluate the effects of nuchal cord on perinatal outcomes
- (3) incidence of nuchal cord at the time of delivery in a tertiary care hospital.

MATERIALS AND METHODS

Total 2853 singleton deliveries occurred during this period out of which data on selected variables was missing for 22 patients. The remaining 2831 were enrolled in the study and were analyzed for presence of nuchal cord at the time of delivery, number of coils whether loose or tight, intrapartum complications and perinatal outcome. Antenatal characteristics of mothers, intrapartum events and immediate neonatal outcomes of patients with and without nuchal cords were compared. Diagnosis was based on of observation at time of delivery. The cases with nuchal cord at the time of delivery were taken as study group and the cases without nuchal cord served as control group. Outcome variables used were MSL and rate of operative delivery. As a measure of

perinatal outcome Apgar score at 1 minute and 5 minutes, need for neonatal resuscitation and incidence of neonatal unit admission was taken.

Statistical analysis

As the number of cases of tight nuchal cord was very small so for the purpose of statistical analysis the cases with tight nuchal cord along with presence of nuchal cord were compared with the cases without nuchal cord. Statistical analysis was performed using the SPSS 21.0 for Windows (SPSS Inc, Chicago, IL) Frequencies and percentages are reported for all categorical variables. Comparisons for categorical variables were conducted using the chi-square test of independence. Odds ratio was used to compare the two groups for any association. For all tests, $P < 0.05$ was considered statistically significant.

RESULTS

a) Population characteristics and incidence of nuchal cord The incidence of nuchal cord and tight nuchal cord in the sample was (26.7%, $n = 756$) and (0.57%, $n = 16$) respectively. Majority of nuchal cords were single loop (76.03%, $n = 587$) and very small proportion was tight cord encircling the neck (0.57%, $n = 16$). Incidence of MSL was 10.2% ($n = 289$). The Apgar score was 7 or more at 1 min in 93.32 % ($n = 2642$) and 7 or more at 5 min in 96.04% ($n = 2719$) newborn babies. The neonatal resuscitation (individual resuscitation components not analyzed) was required by only 7.62 ($n = 216$) newborns and 4.66% ($n = 132$) of newborns required admission to NICU.

Table 1: Incidence of nuchal cord

Variable	n= 2831	Percentage (%)
Nuchal cord absent	2059	72.73
Nuchal cord present	772	26.70
One loop	587	76.03
2 loops	140	18.13
> 2 loops	29	3.75
Tight loop	16	0.57

b) Gestational age

Table 2 shows the incidence of nuchal cord for four predefined strata of gestational age (GA). GA computed as the two-group composite variable showed a statistically significant increase in frequency of nuchal cords; 21.92% ($n = 16$) at 28-32 weeks to 29.65% ($n = 193$) at 33-36 weeks.

c)Maternal antepartum characteristics comparison between nuchal and non-nuchal cord group

The numerical majority of nuchal cords occurred in multigravida women (NC Primigravida, n= 252; NC Multigravida, n=520. The odds of having a nuchal cord were more in age group 21-30 years. No statistically significant association was observed for presence of nuchal cord and amount of amniotic fluid (oligo or polyhydramnios), chronic or gestational hypertension, or presence of intrauterine growth restriction.(Table 2)

d)Meconium-stained amniotic fluid, mode of delivery and nuchal cord

Presence of nuchal cord had no significant association with meconium-stained amniotic fluid presence, thinness or thickness of meconium, and mode of delivery.

e)Apgar scores, need for resuscitation, admissions to NICU and nuchal cord

Table 2 shows a no statistical association between nuchal cord and APGAR at 1 min or APGAR at 5 min. Similarly, there was no statistically significant association between nuchal cord and neonatal resuscitation or admission to the NICU.

Table 2

	TOTAL	NC	No NC	Chi 2 value	degree of freedom	p value	Prevalence odds ratio
Maternal Age	2831	772	2059				
<20	413	74	339	45.618	3	0.00	1
21-30	1512	487	1025				2.17
31-35	628	154	474				1.49
>35	278	57	221				1.19
Gravida							
Primi	849	252	597	3.56	1	0.06	1.00
Multi	1982	520	1462				1.19
Gestational Age							
28-32	73	16	57	3.86	2	0.14	1
33-36	651	195	456				1.52
>37	2107	561	1546				1.29
Oligohydramnios							
Yes	79	16	63	2.02	1	0.16	1
No	2752	756	1996				0.67
Polyhydramnios							
Yes	15	7	8	2.86	1	0.09	1
No	2816	765	2051				2.35
GDM							
Yes	363	110	253	1.93	1	0.16	1
No	2468	662	1806				1.19
Blood Pressure							
Normotensive	2622	721	1901	1.22	2	0.54	1
Gestational hypertension	196	47	149				0.83
Chr HTN	13	4	9				1.17
FGR							
Yes	173	58	115	3.63	1	0.06	1
No	2658	714	1944				1.37
MSL							
Yes	289	92	197	3.38	1	0.07	1
No	2542	680	1862				1.28
Mode of Delivery							
Vaginal	1831	480	1351	4.19	2	0.12	1
Caesarean	962	279	683				1.15
Instrumental	38	13	25				1.66
APGAR at 1-min							
<5	22	9	13	2.73	2	0.26	1
5-7	157	47	110				0.62
>7	2652	716	1936				0.53

APGAR at 5-min							
<5	30	11	19	1.75	2	0.42	1
5-7	114	28	86				0.56
>7	2687	733	1954				0.65
Need for Neonatal Resuscitation							
Yes	216	52	164	1.2	1	0.27	1
No	2615	720	1895				0.84
NICU admission							
Yes	132	35	97	0.04	1	0.84	1
No	2699	737	1962				0.96

CONCLUSION

Various studies have demonstrated varying incidence of nuchal cord but have shown no link to any increase in adverse neonatal outcomes.^{2,6,7} Most of the quoted studies except one have been done on western population as compared to our study which has been done in Indian population reporting to a tertiary care hospital thus providing a basis for further research in this area. We suggest that the clinical usefulness of systematic identification *in utero* of nuchal cord in pregnancies presenting with a normal fetus in the vertex position is limited, but might be of value in the management of breech and twin gestations, and also in the management of chronically growth-retarded foetuses.

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