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Nuchal cord in pregnancy – Unravelling the myth

Medical Science

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Dr Shashikala H Gowda — Associate Professor, Dept of OBG, KIMS Hospital and Research Centre , VV Puram, Bangalore, Karnataka, India

Dr Ramya Madireddy — Post Graduate, Dept of OBG, KIMS Hospital and Research Centre , VV Puram, Bangalore , Karnataka , India

Dr Sowmya K — Assistant Professor, Dept of OBG, KIMS Hospital and Research Centre, VV Puram, Bangalore, Karnataka , India

ABSTRACT

The umbilical cord around the neck of the fetus at the time of birth is called nuchal cord. It affects 23 to 33% of the pregnancies and is considered to be benign. Nevertheless many parents associate this with danger and complications. Hence it is important to address these fears with studies, to determine the actual rate of complications in pregnancies associated with nuchal cord. A variety of complications ranging from increased chances of instrumental and operative deliveries , low APGAR scores , intra partum fetal heart rate irregularities, etc., have been attributed to the presence of nuchal cord . Our study is an attempt to observe and document the incidence of such complications and assess their significance.

INTRODUCTION

A nuchal cord occurs when the umbilical cord becomes wrapped 360 degrees around the fetal neck [1]. Nuchal cords are common , with the prevalence ranging from 6 – 37%[2]. The prevalence is found to increase with the duration of pregnancy. From 5.8% at 20 weeks gestational age , it increases up to 29% at 42 weeks [3]. If the umbilical cord becomes overstretched or compressed during labour, it usually leads to temporal fetal bradycardia [4]. The nuchal cord is often blamed for problems that are encountered during delivery and is often cited as a major cause of fetal distress and perinatal mortality [5].

Several studies have been done to analyze the pregnancies with nuchal cord and yielded varying results [3, 5, 6, 7]. The insufficiency in data regarding this nuchal cord and its role in fetal morbidity has become a source of anxiety and frustration to both parturients and healthcare professionals [8]. Due to the improvement in ultrasound technique and accessibility, the detection rate of nuchal cord has increased steadily.

This study was done to determine the incidence of nuchal cord and assess its significance in the perinatal outcome.

MATERIALS AND METHODS

STUDY DESIGN - prospective cross-sectional study
STUDY PERIOD - 1 year (January 2014 – January 2015)
STUDY PLACE - KIMS Hospital and Research Centre, Bangalore

SUBJECTS - all deliveries with gestation age of 28 weeks and above, in KIMS Hospital and Research Centre, Bangalore.

The study group included both primigravida and multigravida with singleton pregnancies. Pregnancies complicated with intrauterine fetal death, congenital malformations of fetus, malpresentations and multiple gestations were excluded. All the patients in the study group were booked cases with an average of 4 antenatal visits. The maternal and fetal monitoring was done in labour as per partograph. Fetal heart rate monitoring was done by intermittent auscultation with stethoscope and fetal Doppler in uncomplicated cases. Continuous electronic fetal heart monitoring was done in high risk pregnancies like hypertensive disorder of pregnancy, intrauterine growth restriction (IUGR), oligohydramnios and diabetes mellitus.

Details of each delivery during the study period were recorded. Number of loops around the fetal neck, tight or loose coils, Apgar score at 1 and 5 minutes after birth were noted. The tight coils were those which had to be cut before the delivery of the body of the fetus. Birth weight and sex of all the babies was noted. Length of cord was measured and labelled as long (>70 cm), short (<35 cm) or normal.

RESULTS

Out of the total 1536 deliveries (vaginal and caesarean) , which occurred during this study period , total 162 (10.55%) neonates had nuchal cord. Majority of the patients were from the age group 21-25 years (47.53%). The number of multipara were more (58.64%). Only 17.90% foetuses with nuchal cord manifested with fetal heart rate variations, among which the most common was variable deceleration. Most of the neonates born with tight nuchal cord also showed significant (p = 0.04) low Apgar scores in 1 min, but there was no significant difference p = 0.07) of Apgar after 5 minutes. No significant differences of mean length of the cord (52.56cm and 50.48cm), mean weight of the baby (2.86kg and 2.88kg) was seen in cases with or without nuchal cord.

Incidence of caesarean deliveries was not increased in cases with nuchal cord. On the contrary it was lower than that in cases without nuchal cord.

Table 1, Age distribution among cases with nuchal cord (n=162)

AGE	NO . OF .PATIENTS	PERCENTAGE
15 – 20 yrs	40	24.70
21 – 25 yrs	77	47.53
26 – 30 yrs	42	25.92
31 – 35 yrs	02	01.23
>35 yrs	01	00.62

Table 2, gravida status of the patients in cases with nuchal cord(n=162)

GRAVIDA	NO . OF .PATIENTS	PERCENTAGE
primigravida	67	41.36
multigravida	95	58.64

Table 3, fetal heart rate variations in cases with nuchal cord (n = 162)

TYPE	NO . OF .PATIENTS
Bradycardia	05
Tachycardia	04
Early deceleration	03
Late deceleration	06
Variable deceleration	11
Total	29 (17.90%)

Table 4 , Mode of delivery in relation with nuchal cord

MODE OF DELIVERY	With nuchal cord (%)	Without nuchal cord (%)	Total number(%)
Normal	134 (82.72)	1014 (73.80)	1148 (74.74)
Vacuum extraction	05 (3.09)	11 (0.80)	16 (1.04)
Caesarean delivery	23 (14.20)	349 (25.40)	372 (24.22)
Total	162 (10.55)	1374 (89.45)	1536(100%)

Table 5, distribution of cases as per variety of nuchal cord(n=162)

Variety	Loose	Tight	Total
Single	37	98	135 (83.33)
Multiple	9	18	27 (16.67)
Total (%)	46 (28.40)	116 (71.60)	162(100%)

Table 6, relationship of operative delivery with nuchal cord(n=28)

Nuchal cord	Caesarean delivery	Vacuum delivery	Total
Tight loop	18	04	22
Loose loop	05	01	06
Single loop	15	03	18
Multiple loop	08	02	10

Table 7, Apgar score of neonates with nuchal cords(n=162)

Apgar score	At 01 min		At 05 min	
	Tight number (%)	Loose number(%)	Tight number(%)	Loose number(%)
00-04	09 (7.76)	00	05 (4.31)	00
05-06	30 (25.86)	07 (15.22)	06 (5.17)	00
07-10	77 (66.38)	39 (84.78)	105 (90.52)	46(100)
Total	116	46	116	46

Table 8, mean apgar scores and significance at 1 and 5 minutes

Mean apgar	LOOSE CORD	TIGHT CORD	P VALUE
1 MIN	7.8 (95% CI = 7.51-8.09)	6.9 (95% CI = 6.72-7.08)*	0.04 (<0.05) (significant)
5 MINS	9.3 (95% CI = 9.01-9.59)	8.9 (95% CI = 8.72-9.08)*	0.07 (>0.05) (not significant)

***CI – confidence interval**

DISCUSSION

The incidence of nuchal cord in this study was 10.55% and it is comparable to 14.7%, 17%, 18% reported in some other studies [6, 8, 9]. The rate of caesarean delivery in nuchal cord group and the rest suggests that , the presence of nuchal cord does not increase caesarean delivery rate during labour. The significantly low Apgar scores at 1 min in tight nuchal cord group compared to loose nuchal cord (p=0.04), implies the presence of birth asphyxia as a result of cord compression, during labour in the presence of tight nuchal cord. The decrease of low Apgar score rate at the 5th minute in the tight nuchal cord group suggests that primary neonatal adaptation is not impaired by tight nuchal cord, similar to some studies [6,11]. However the limitation of this study was that the analysis did not control for some confounders of perinatal outcomes such as gestational age at delivery, birth weight and fetal presentation.

CONCLUSION

Loose loop of cord around neck may not be associated with adverse perinatal outcome. However ,tight loop may be associated with increased risk of low Apgar scores at 1st minute. Hence, the ultrasound diagnosis of a nuchal cord should not be the indication of elective caesarean delivery, but such patients do require close monitoring during labour, preferably continuous electronic fetal heart rate monitoring.

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