



Original Research Article

## A Retrospective Study on Incidence of Nuchal Cord at Delivery and Its Intrapartum Complications

Ashutosh Bahulekar<sup>1</sup>, Afroz Afshan<sup>2</sup>, Shrikant Ohri<sup>3</sup>

<sup>1</sup>Assistant Professor, <sup>3</sup>Resident, Department of OBG, KIMS, Karad.

<sup>2</sup>Assistant Professor, Department of Physiology, KIMS, Amalapuram, India

Corresponding Author: Ashutosh Bahulekar

Received: 10/11/2014

Revised: 15/02/2015

Accepted: 25/02/2015

### ABSTRACT

**Background:** Umbilical cord around neck at birth, a common obstetric complication, affects fetal hemodynamics. Does it influence fetal outcome?

**Aims:** This study was conducted to investigate the incidence of cord around neck in 350 deliveries and its outcome.

**Materials And Methods:** A retrospective study with 350 deliveries for a period of 1 ½ months (1<sup>st</sup> June 2013-15<sup>th</sup> July 2013) in Obstetrics and Gynecology department at Krishna Institute Of Medical Sciences, Karad, Maharashtra, India. Sixty (60) cases of nuchal cord (out of 350 deliveries) were taken out in department of Obstetrics and Gynecology at KIMS, Karad for a period of one and half month. Age, parity, normal vaginal/caesarean, fetal distress, presence of meconium, NICU admission, Apgar score at 1 and 5 minutes after birth were noted.

**Results:** In our study of 60 cases, 55 (91.67 %) were of normal vaginal delivery, 5 (8.33%) cases underwent lower segment caesarean section and the fetal distress was its main indication (3 out of 5).

**Conclusion:** In our study we found that nuchal cord around neck does not interfere much in the process of delivery by creating fetal distress. It can delay the progress of labour due to traction.

**Key Words:** Apgar score, fetal distress, labour, meconium, nuchal cord, NICU.

### INTRODUCTION

When the umbilical cord gets wrapped around the fetal neck 360 degrees, become a nuchal cord. [1] The nuchal cord is classified as "Type A" nuchal cord that is wrapped around the neck 360 degrees and "Type B" pattern is a hitch which is described as a true knot and cannot be undone. [2] Nuchal cords have prevalence rates of 6% to 37% and thus very common. [3] Approximately half of the nuchal cords

resolve before delivery. [4] The prevalence increases with the duration of pregnancy, from 5.8% at 20 weeks of gestation up to 29% at 42 weeks of gestation. [5] Hippocrates described in the "De Octimestri Partu" the nuchal and chest coiling of the umbilical cord and considered it as "One of the great dangers of the eight month". He also stated that "when the nuchal cord persists until the term pregnancy, it will

cause suffering to the mother and either perish or born difficulties to the fetus". [6]

The occurrence of nuchal cord entanglement is associated with an increased rate of variable fetal heart rate decelerations during the 1st and 2nd stage of labour. [7] Although the newborns with cord encirclement required resuscitation, fetal or neonatal death could rarely be attributed to the nuchal cord. [7] The study was done to find out the incidence of nuchal cord within a group of population and its impact on perinatal outcome, intrapartum complications and mode of deliveries.

Several studies have been done to analyze the deliveries with nuchal cord with differing results. [3] Although the nuchal cord is often blamed for most of the problems encountered during delivery, the actual significance that a nuchal cord has on the intrapartum events and perinatal outcome is controversial. This study was done to find out the incidence of nuchal cord at delivery, intrapartum complications like meconium staining of liquor, mode of delivery and perinatal outcome in the cases with nuchal cord.

**Aims and objectives:**

1. To find out the incidence of nuchal cord at delivery and intrapartum complications.
2. To assess the mode of delivery and perinatal outcome in the cases with nuchal cord.

**MATERIALS AND METHODS**

This is a retrospective study with 350 deliveries for a period of 1 ½ months (1<sup>st</sup> June 2013-15<sup>th</sup> July 2013) in obstetrics and gynecology department at Krishna Institute Of Medical Sciences, Karad, Maharashtra, India. The study was done after obtaining permission from ethical committee.

The inclusion criteria include all the record papers of patients who delivered after 28 weeks of gestation. The age, parity, mode of delivery (normal vaginal/caesarean), fetal

distress, presence of meconium, NICU admission and Apgar score at 1 and 5 minutes after birth were noted from the medical record papers for all study subjects. The exclusion criteria include patients below 28 weeks of gestation.

**RESULT**

Total 350 cases were studied, out of which 60 cases had cord around neck. Out of 60 cases 55 (91.67 %) had normal vaginal delivery, 5 (8.33%) cases underwent caesarean section and fetal distress was the main indication (3 out of 5). The majority of patients were of the age group 21-25 years and presence of nuchal cord was more in primigravida.

Normal delivery was the mode of delivery in 55 out of 60 cases of nuchal cord whereas caesarean was performed in 5 cases with nuchal cord. Only 2 cases were admitted in the NICU out of 60. Meconium association was in 8 cases while the meconium was absent in 52 cases of nuchal cord. Fetal distress was noted in 3 cases of nuchal cord and the rest 57 had no association with fetal distress.

**Table 1: Distribution of gravida status of cases as per age group**

Age group (in years)	Primigravida (n=199) (%)	Multigravida (n=151) (%)	Total (n=350) (%)
15-20	54(27.13%)	7(4.63%)	61(17.42%)
21-25	122(61.30%)	84(55.62%)	206(58.85%)
26-30	21(10.55%)	49(32.45%)	70(20%)
31-35	2(0.10%)	10(6.62%)	12(3.42%)
>35	0	1(0.66%)	1(0.28%)

**Table 2: Mode of delivery in relation with nuchal cord**

Mode of delivery	With nuchal cord Number (%)	Without nuchal cord Number (%)	Total number (%)
Caesarean section	5(4.85%)	104(35.86%)	109(31.14%)
Normal delivery	55(91.67%)	186(64.13%)	241(68.85%)
Total	60	290	350

**Table 3: NICU admissions**

NICU admission	Nuchal cord present	Nuchal cord absent	Total
Baby in NICU	03	003	006
Baby not in NICU	57	287	344
Total	60	290	360

**Table 4:- Apgar score of neonates with nuchal cords**

Apgar score	At 01 min	At 05 min
00-04	00	00
05-06	01	00
07-10	59	60
Total	60	60

**Table 5: Fetal Distress Associated With Nuchal Cord**

Fetal Distress	Cord Present	Cord Absent	Total
Present	03	015	018
Absent	57	275	332
Total	60	290	350

**Table 6: Presence of meconium**

Presence of meconium.	With Nuchal cord	Without Nuchal cord	Total
Present	08	036	044
Absent	52	254	306
Total	60	290	350

## DISCUSSION

Crawford first defined nuchal cord as the condition in which the umbilical cord was round at least once around the neck of the fetus.<sup>[8]</sup> Baden in 1955 wrote: "Intrauterine life, which is sustained only by two small arteries and a tortuous vein coursing through a long flexible cord, hangs by a very delicate thread".<sup>[9]</sup> It seems that this delicate thread too often is wrapped around the newborn's neck. Nuchal cords that form early can resolve at any time or persist until term and coils may form shortly before delivery.<sup>[10,11]</sup> Nuchal cord is not associated with adverse perinatal outcome.<sup>[10]</sup>

Total 350 cases were studied, out of which 60 cases had cord around neck making it an incidence of 17.14%. 55 (15.71%) had normal vaginal delivery, 5 (1.42%) cases underwent caesarean section and fetal distress was the main indication (3 out of 5). The reported incidence in Indian population varied from 5.3% to 10.9%<sup>[12,13]</sup> which is in concordance with present study. Miser et al. and Shrestha observed quite higher (24%) incidence.<sup>[9,14]</sup>

Age of the majority of patients (58.85%) was within the range of 21-25 years, as expected as this age group consists of most fertile women. Multigravida

comprised 55.62% and primigravida 61.30% which simulates some other studies like Gardiner et al but Adinma didn't find any relation of parity with nuchal cord.<sup>[15,16]</sup>

Incidence of lower segment caesarean section (LSCS) with nuchal cord in this study was 4.85% and fetal distress was the most common reason that is 3 out of 5 cases. Dhar et al found the incidence of LSCS 39% of case with tight nuchal cord and 61% with loose nuchal cords.<sup>[17]</sup>

Most of the babies in this study had Apgar score of 7-10 after 1 min (59 cases) and 5 min (60 cases). The total number of cases with low Apgar score of 5-6 at 1 minute was 1 case. None of the babies had Apgar score <7 after 05 minutes suggesting that any possible effect is only transient. Similar findings by other suggest that nuchal cords were not a major cause of fetal asphyxia.<sup>[10,17]</sup>

## CONCLUSION

The cord around neck does not interfere much in the process of delivery by creating fetal distress, but isolated incidences are observed that cord around neck causes intrauterine death due to asphyxia. So, one should be vigilant while delivering the baby with cord around neck. The nuchal cord can also delay the progress of labour due to traction.

## ACKNOWLEDGEMENT

We are thankful to our colleagues for their guidance in making this study possible and valuable detailed advice on theme, organization and grammar of the paper.

## REFERENCES

1. "Fetus or Newborn Problems: Labor and Delivery Complications: Merck Manual Home Edition". Retrieved 2010-03-27.
2. Collins JH. "Umbilical cord accidents: human studies". *Semin Perinatol.* 2002;26 (1): 79–82. Doi:10.1053/sper.2002.29860. PMID 1187657

3. J. D. Larson, W. F. Rayburn, V. L. Harlan. Nuchal cord entanglement and gestational age. *Amer J Perinatol*.1997; 14:555–557.
4. "Ultrasound Detection of Nuchal Cord Prior to Labor Induction and the Risk of Cesarean Section". Retrieved. 2010-07-09.
5. Nuchal cord, [http://en.wikipedia.org/wiki/Nuchal\\_cord](http://en.wikipedia.org/wiki/Nuchal_cord), 2010.
6. Angeletti L.R. "De Octimestri Partu and pathology of the last trimester of pregnancy". *Medsecoli*.1990;2(1):75-92
7. Janet D, Larson MD, William F, Rayburn MD, Crosby RSS, Gary R, Thurnan MD. Multiple cord entanglement and intrapartum complications. *Am J Obstet Gynecol* 1995; 173:1228-31.
8. Crawford. J S. Cord around the neck a further analysis of medicine. *Acta Pediatrics*: 1964; 53:535-537.
9. W. F. Miser. Outcome of infants born with nuchal cords. Family practice service, Reynolds Army Community Hospital. Fortsill, UK. *J Fam Pract* 1992; 34 (4): 441-5.
10. Sheiner E, Abramowick JS, Levy A, Silberstein T, Mazor M, Hershkovitz. Nuchal cord is not associated with adverse perinatal outcome. *Arch Gynecol Obstet* 2006 May; 274(2): 81-83.
11. Collins JH, Collins CL, Weckworth SR, Angelis L. Nuchal cords; timing of perinatal diagnosis and duration. *Am J Obstet Gynecol* 1995; 173:768.
12. Reed R, Barnes M, Allan J. Nuchal cords: Sharing the evidence with parents. *British Journal of Midwifery* 2009; 17(2):106-109.
13. Chatterjee AK, Sengupta. Cord around the neck of the fetus. A study on 101 cases. *J Obs Gyn India* 1989; 39: 660-4.
14. Shrestha NS, Singh N. Nuchal cord and perinatal outcome, Kathmandu University Medical Journal 2007; 5(3): 360-3.
15. Mastrobattista JM, Hollier L M, Yeomons ER, et al . Effects of nuchal cord on birth weight and immediate neonatal outcome. *Am J Perinatol* 2005; 22(2): 83-5.
16. Adinma JI. Effect of Cord entanglement on Pregnancy outcome. *Intl J Obs Gyn* 1990 May; 32(1): 15-8
17. Dhar Kk, Ray SN, Dhall GI. Significance of nuchal cord. *J. Indian Med Assoc*. 1995; 93(12): 451-453.

How to cite this article: Bahulekar A, Afshan A, Ohri S. A retrospective study on incidence of nuchal cord at delivery and its intrapartum complications. *Int J Health Sci Res*. 2015; 5(3):66-69.

\*\*\*\*\*