

Frequency and Perinatal outcome in patients with tight Nuchal Cord

Shazia Zulfiqar¹, Madiha Khalid², Sidra Naeem³

^{1,3} Post Graduate Trainee, Department of Obstetrics and Gynecology, Fatima Memorial Hospital, Lahore

² Senior Registrar, Department of Obstetrics and Gynecology, Fatima Memorial Hospital, Lahore

Author's Contribution

^{1,2,3} Conception of study

² Experimentation/Study conduction

^{1,2} Analysis/Interpretation/Discussion

^{1,2} Manuscript Writing

³ Critical Review

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Corresponding Author

Dr. Madiha Khalid

FCPS, Senior Registrar,

Fatima Memorial Hospital, Lahore.

madiha_khalid_mir@hotmail.com

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Abstract

Background: 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. However, the actual significance of the nuchal cord on the outcome of an infant is controversial.

Objective: To determine the frequency of tight nuchal cord in patients with fetal distress and to determine the perinatal outcome in patients with tight nuchal cord.

Material & Methods: Pregnant females age 18-35years, presenting with singleton pregnancy at gestational age ≥ 28 weeks in labour with fetal distress were recruited for this descriptive cross-sectional study from the Department of Obstetrics & Gynaecology Fatima Memorial Hospital, Lahore from January 2015 to June 2015.

Results: In our study, out of 350 cases, 62% (n=217) were between 18-30 years of age and 38% (n=133) were between 31-35 years. the mean age was 27.86 ± 4.60 years, frequency of patients having a tight nuchal cord, in patients with fetal distress presenting in a tertiary care hospital was calculated as 32% (n=112). Frequency of perinatal outcome in patients having a tight nuchal cord was recorded which shows that 34 (30.36%) had an emergency cesarean section, 39 (34.82%) had APGAR score < 7 at 1 min and 9 (8.04%) had APGAR score at 5 mins.

Conclusion: The frequency of patients having a tight nuchal cord, in patients with fetal distress presenting in a tertiary care hospital is higher while the emergency cesarean section and APGAR score < 7 at 1 minute are the most common adverse perinatal outcome among these patients.

Keywords: Fetal distress, tight nuchal cord, perinatal outcome, cesarean section, lower APGAR score.

Introduction

Nuchal cord (i.e. entanglement of the umbilical cord around the fetal neck) is the most frequent cord

accident^{1,2} and can lead to intrauterine fetal death, failed fetal descent, acute fetal distress, and neonatal death—although there are often no adverse fetal effects^{3,4} Nuchal cords are a common finding, whose prevalence varies by gestational age.^{5,6} At term, the

prevalence ranges from 15 to 34% in the largest retrospective studies.⁷ In one study of 13,895 singleton deliveries >20 weeks of gestation, the overall prevalence of nuchal cords at birth rose in a linear pattern from 5.8% of deliveries at 20 weeks of gestation to 29% of deliveries at 42 weeks of gestation. The increasing frequency was statistically significant and occurred with both single and multiple nuchal cords. The frequency of tight nuchal cord found in another study was 26.15%.^{8,9}

The nuchal cord has been associated with labor induction and augmentation, the prolonged second stage of labor, and fetal heart rate abnormalities.¹⁰ One report has described a decrease in umbilical cord pH at delivery with a nuchal cord, but the difference found (7.32 vs 7.30) does not appear to be clinically significant.¹¹ A nuchal cord can be detected using color Doppler ultrasound, with a sensitivity of over 90%. Nuchal cords rarely cause fetal demise and are no intrinsic reasons for intervention.¹² Given the minor decrease in pH, fetal monitoring in labor would appear to be prudent, but no data are available to address this issue.¹³

Perinatal morbidity and mortality data are difficult to assemble on the topic of the nuchal cord since controversy exists in the literature regarding its clinical significance.⁹ The findings of previous studies are contradictory i.e. low risk in the nuchal cord and its significant impact on poor perinatal outcome,^{14,15} which needs to research the outcome in patients with nuchal cord. Determining the perinatal outcome of the nuchal cord in our local population through this study, the results will be helpful to determine the perinatal outcome in patients with tight nuchal cord in our local population and modify our clinical practice accordingly.

Objectives

The objectives of the study were to determine the frequency of tight nuchal cord in patients with fetal distress presenting in a tertiary care hospital and to determine the perinatal outcome in patients having a tight nuchal cord.

Material and Methods

This Descriptive cross-sectional study was carried out at the Department of Obstetrics & Gynaecology Fatima Memorial Hospital, Lahore from January 2015 to June 2015.

The calculated sample size was 350, 95% confidence level, 2.5% margin of error and taking an expected percentage of Apgar score<7 at 5 minutes i.e. 5.88% perinatal outcome in patients with tight nuchal cord. Sampling Technique was Non-probability, purposive sampling of pregnant females of age 18-35years, presenting with singleton pregnancy at gestational age ≥ 28 weeks in labour with fetal distress (detected on CTG) were included. Patients with antepartum haemorrhage, other indications of LSCS, repeat LSCS, GDM, severe pre-eclampsia and eclampsia, placenta previa, breech presentation, transverse lie were excluded. All 350 patients fulfilling the inclusion/exclusion criteria were included in the study after informed consent. Frequency of patients having a tight nuchal cord and its perinatal outcome (i.e. emergency cesarean section, low APGAR score (<7) at 1 minute and 5 min) were recorded.

Data was entered and analyzed in computer software SPSS 21. Mean and the standard deviation was calculated for age. Frequencies and percentages were calculated and presented for a frequency of tight nuchal cord and perinatal outcome i.e. emergency cesarean section and APGAR score<7 at 1 and 5 minutes.

Result

Age distribution of the patients showed that 217 (62%) had an age between 18-30 years and 133 (38%) had to age between 31-35 years. The mean age was 27.86 \pm 4.60 years. Gestational age of the patients was recorded which shows that 271 (77.43%) presented during 28-36 weeks and 79 (22.57%) presented during 37-40 weeks of gestation. The mean gestational age was 36.43 \pm 3.21 weeks.

Table 1: Baseline characteristics of patients (n=350)

	Mean \pm SD	27.86 \pm 4.60
Age (years)	18-30	217 (62%)
	31-35	133 (38%)
	Mean \pm SD	36.43 \pm 3.21
Gestational Age (weeks)	28-36	271 (77.4%)
	37-40	79 (22.6%)
Tight nuchal cord	Yes	112 (32%)
	No	238 (68%)

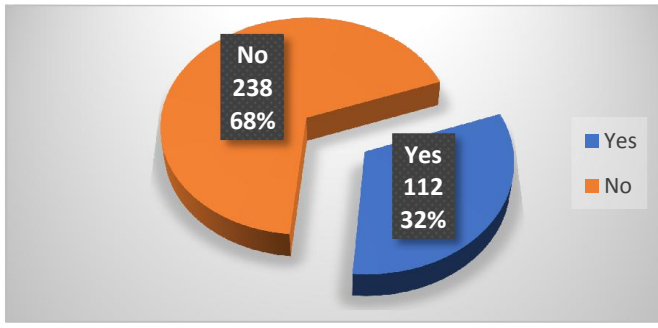


Figure 1: Distribution of tight nuchal cord

Table No. 2: Perinatal outcome in patients with a tight nuchal cord

Perinatal outcome	Number (%)
Emergency cesarean section	34 (30.4%)
APGAR score<7 at 1 min	39 (34.8%)
APGAR score<7 at 5 min	9 (8.04%)

Discussion

Umbilical cord forms the connecting link between fetus and placenta through which blood flows to and from the placenta and is the lifeline of a fetus. Cord accidents lead to 5-18% of all fatal foetal-asphyxia cases and 10% of stillbirths, of which the nuchal cord is one of the most common findings.¹⁶ Umbilical cord abnormalities may be associated with fetal heart rate irregularities this might change the mode of delivery from vaginal delivery to cesarean delivery and may be responsible for adverse perinatal outcomes.¹⁷ 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.¹⁸ A nuchal cord is blamed for problems that are encountered during delivery and for increased risk of adverse perinatal outcomes such as fetal heart decelerations and perinatal mortality.³

The impact of the nuchal cord on perinatal outcomes has been the subject of research for many years. Although the accumulated data has pointed out some unfavourable perinatal effects, the heterogeneity of the study groups both including a vaginal delivery and C-section and the inability to adjust the interfering factors ended up with some controversies. This is why there is not much known about the effects of the nuchal cord in women who are not in the labour

process.¹⁹ However, the actual significance of the nuchal cord on the outcome of an infant is controversial.²⁰ Previous literature is creating controversy regarding low risk in the nuchal cord group and the significantly higher incidence of perinatal outcome in these patients which needs to research perinatal outcome in patients with a nuchal cord while local data is lacking in Pakistan. Determining the perinatal outcome of nuchal cord in our local population through this study, the results will be helpful to determine the frequency of perinatal outcome in patients with tight nuchal cord in our local population and modify our clinical practice accordingly.

In our study, the frequency of a tight nuchal cord was 32%. The frequency of poor perinatal outcomes in such cases was high i.e. 30.36% had an emergency cesarean section, 34.82% had APGAR score <7 at 1 min and 8.04% had APGAR score at 5 mins.

Our findings are in agreement with some previous literature regarding the frequency of tight nuchal cord which was found in as 26.15 percent.^{9,12} Regarding perinatal outcome in these patients, we agree with some other authors who recorded that tight nuchal cord is associated with adverse perinatal outcome i.e. 23.52% cesarean section, Apgar score <7 at one minute in 23.53 percent and at five minutes in 5.88 percent babies.⁹ On the contrary, other studies have found the nuchal cord to be a normal part of intrauterine life that is seldom associated with any perinatal morbidity ²¹, as Ngowa KJD demonstrates that emergency cesarean section 7.82% in a tight nuchal cord.¹⁵ Dhar et al found the incidence of LSCS 27.2% of a case with tight nuchal cord and 15.7% with loose nuchal cords ²², which is closely in agreement with our study. Most of the babies in this study had an Apgar score of 7-10 after 1 min (112 cases) and 5 min (148 cases). The total number of cases with a low Apgar score at 1 min was 40 (26.31%). Eight babies had an Apgar score <7 after 05 min (5.20%) suggesting that any possible effect is only transient. Similar findings by other suggest that nuchal cords were not a major cause of fetal asphyxia.^{21,22}

The other perinatal morbidities of tight nuchal cord and comparison with loose nuchal cord or fetuses without nuchal cord were not analyzed in our study, being the limitation of this trial, while previously, Sheperd et al.²³ reported that five of the 27 neonates born after a tight nuchal cord developed anemia, and three of the five neonates had signs consistent with hypovolemia, manifest by hypotension necessitating RBC transfusion. In addition, they reported that four

of the 20 neonates born with a loose nuchal cord developed asymptomatic anemia later during the hospital course.³ In another study, the Nuchal cord was present in (31.3%) of women of the study group and in (16.4%) of the control group. The most fatal heart abnormality found was fetal deceleration (96.1%) and most commonly was late deceleration (42.8%).¹⁷ Pregnancy with the Nuchal cord has a 2.6 folds increase in caesarean section rate than controls (21.3%) vs. (9.3%), mainly because increased fetal heart rate irregularities (3.2 folds), and prolonged second stage of labour. Meconium staining of liquor was more frequently seen among the nuchal cord group than controls. The fetal outcome was found to be associated with a higher incidence of low birth weight, low Apgar score at 1 and 5 minutes and more neonatal care unit admission in pregnant with nuchal cord.

Another study by Vanhaeserbroeck et al., reported two-term infants with a tight nuchal cord born with life-threatening hypovolemic shock. Both were pale and tachycardic with weak pulses, poor capillary perfusion, and hypotension, which improved after RBC transfusion.²³ Fetal-maternal hemorrhage was not evident, as the Kleihauer-Betke test was negative, and no other source, other than a tight nuchal cord, was found to explain the hypovolemic shock. But another study found that of 8,580 patients, 2,071 (24.14%) had a nuchal cord. There was no difference in the risk of neonatal composite morbidity in patients with or without a nuchal cord (8.69 vs. 8.86%; $p = 0.81$). The nuchal cord was associated with category II fetal heart tracing and operative vaginal delivery (6.4 vs. 4.3%; $p < 0.01$). Thus nuchal cord is associated with category II electronic fetal monitoring parameters, which may drive increased rates of operative vaginal delivery. However, there is no significant association with neonatal morbidity.²⁴

Balsak et al., also concluded through a study that the presence of the nuchal cord indicates a need for increased care but is not associated with adverse perinatal outcomes²⁵. However, the findings of our study are among the primary stage data which requires some other trials to authenticate our findings, till then our magnitude may be considered as initial.

Conclusion

We concluded that the frequency of patients having a tight nuchal cord, in patients with fetal distress presenting in a tertiary care hospital is higher while the emergency cesarean section and APGAR score < 7

at 1 minute are the most common adverse perinatal outcome among these patients. However, patients presenting with fetal distress may be given more attention to the management of adverse perinatal outcomes.

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