Section: Obstetrics and Gynaecology

Original Research Article

IMPACT OF PRENATALLY DIAGNOSED NUCHAL CORD ON FETAL OUTCOME AT TERTIARY CARE HOSPITAL, VISAKHAPATNAM

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Abstract

Background: The prevalence of nuchal cord is 20 to 30%. Fetal outcome in most of them is good except for increased incidence of birth asphyxia. The aim is to study the impact of prenatally diagnosed nuchal cord on fetal outcome. **Materials and Methods:** This is a prospective observational study conducted from December 2018 to September 2020 at Government Victoria Hospital, Andhra Medical College, Visakhapatnam. Ultasound scan was done in antenatal women between 37 to 40 weeks of gestation excluding women with high risk factors. Fetal outcome was documented in all the cases after delivery. Data was entered in Microsoft excel and analysis was done using SPSS version 2.0. Results on categorical measurements are presented as percentages. Significance is assessed at 5% level of significance. P<0.05 is statistically significant. **Result:** Out of 300 total deliveries, 249 were delivered normally, 38 by Caesarean section, 1 by ventouse, 2 by mid low forceps and 10 by outlet forceps which accounts to 83, 12.66, 0.33, 0.66 and 3.33% respectively. Out of 300 neonates, 286 had an APGAR score of more than 7 at 5 minutes accounting to 95.3%, while 12 had APGAR scores between 4 to 7 accounting to 4% and 2 had APGAR scores less than 4 at 5 minutes accounting to 0.66%. Among 300 cases, 15 cases had late decelerations accounting to 5% and 10 cases had variable decelerations accounting to 3.33%. Out of 20 cases with prolonged labour, 8 had prolonged 1st stage of labour and 12 had prolonged 2nd stage of labour. **Conclusion:** The rate of adverse events like abnormalities in CTG, prolonged labour, poor APGAR score and perinatal deaths were very less. Hence the presence of nuchal cord is not an indication for caesarean section unless there are any abnormalities in CTG.

INTRODUCTION

The birth rate in India is 18.2/1000 population.[1] The prevalence of nuchal cord is around 20 to 30%.[2] They usually occur in long cords. The longer the cord length, the higher the number of loops. Nuchal cords are more common in posterior placentae. Looping has been identified in early gestation as well as at term.[3] Most of them do not pose much problem.

Around 90% of deliveries with nuchal cord go uneventful. But nuchal cord entanglement is one of the causes of birth asphyxia. It comprises to about 5 to 18% of birth asphyxia.[4] The cause for birth asphyxia in nuchal cord entanglement might be due to cord compression. The presence of nuchal cord has been the scape goat for a bad perinatal outcome such as birth asphyxia or still birth.[5] The diagnosis of nuchal cord has become easy now a days due to ultrasonography. Some obstetricians prefer elective caesarian section while others allow the patients to deliver vaginally. This bias in mode of delivery has been increasing due to prenatal diagnosis of nuchal cord through ultrasound.[6]

When the umbilical cord becomes wrapped around the neck of fetus, it is known as a nuchal cord. When the nuchal cord is tight, it can cause problems.[7] The term “Tight cord around the neck syndrome (tCAN)” refers to the cluster of cardiorespiratory and neurological signs that occur secondary to tight nuchal cord.[8] On CTG, the

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presentation of umbilical cord compression is variable decelerations in FHR pattern.[9]

MATERIALS AND METHODS

This is a prospective observational study conducted from December 2018 to September 2020 at Government Victoria Hospital, Andhra Medical College, Visakhapatnam. Data was entered in Microsoft excel and analysis was done using SPSS version 2.0. Results on categorical measurements are presented as percentages. Significance is assessed at 5% level of significance.

P<0.05 is statistically significant, P<0.001 is statistically highly significant.

Inclusion Criteria

- Age between 20 to 30 years
- Hemoglobin concentration > 9 gm%
- Singleton pregnancy
- Live fetus
- Gestational age between 37 to 40 weeks
- Spontaneous onset of labour
- Intact membranes
- Normal CTG at admission
- AFI between 8 to 20 cm

Exclusion Criteria

- Multiple gestation
- Gestational age > 40 weeks
- Intrauterine fetal death
- Premature rupture of membranes
- Multiple loops of nuchal cord
- Active phase of labour
- Oligohydramnios
- Any medical complications.

All antenatal women attending labour room who met all the inclusion criteria are subjected to ultrasound doppler for the presence of nuchal cord. Admission CTG is performed. They are allowed to progress spontaneously without any intervention. Careful monitoring of fetal heart rate is done. Artificial rupture of membranes is done at 4 to 5 cm of cervical dilatation and continuous CTG monitoring will be done. Any abnormality in the fetal heart rate pattern will be intervened immediately either with forceps or caesarian section depending on the station. Any meconium stained liquor or delay in progress is noted. After delivery, the APGAR score is noted at 1 minute and 5 minutes of life. Active management of third stage of labour is performed. Umbilical cord length is measured for all the cases from the placenta to the stump. All the neonates are thoroughly examined by the neonatologist. Indicated babies are admitted into NICU. All the babies are followed till discharge.

RESULTS

A total of 412 cases with nuchal cord on ultrasonography were taken into this study. Out of them, 74 cases did not have any nuchal cord at birth and they were not presented in this study. 38 cases were not included due to non-acceptance by patients.

Out of 300 total deliveries, 249 were delivered normally, 38 by Caesarean section, 1 by ventouse, 2 by mid low forceps and 10 by outlet forceps which accounts to 83, 12.66, 0.33, 0.66 and 3.33% respectively.

Table 1: Mode of delivery

Mode of delivery	N=300	Percentage
Normal delivery	249	83%
Ventouse	1	0.33%
Midlow forceps	2	0.66%
Outlet forceps	10	3.33%
LSCS	38	12.66%

Out of 38 Caesarian sections, 18 were performed due to abnormal CTG and 20 were performed due to failure in progress of labour, accounting to 47.4% and 52.6% respectively.

Table 2: Incidence of decelerations

Criteria	N=300	Percentage
Normal CTG	268	89.3%
Late deccelerations	15	5%
Variable deccelerations	10	3.33%

Out of 20 cases with prolonged labour, 8 had prolonged 1st stage of labour and 12 had prolonged 2nd stage of labour.

Table 3: percentage of prolonged labour in cases of nuchal cord

Criteria	N=300	Percentage
Prolonged 1ststage	8	2.66%
Prolonged 2ndstage	12	4.0%
Total	20	6.66%

Out of 38 Caesarian sections, 18 were performed due to abnormal CTG and 20 were performed due to failure in progress of labour, accounting to 47.4% and 52.6% respectively.

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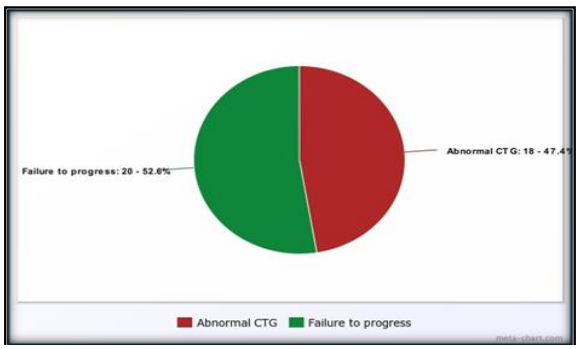

Figure 1: Indications of caesarean sections

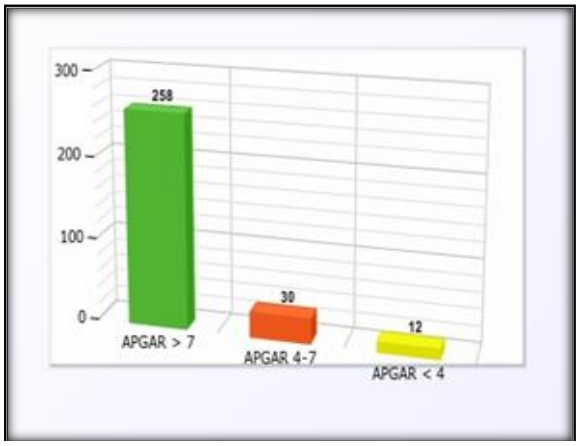

Figure 2: APGAR score at 1 minute

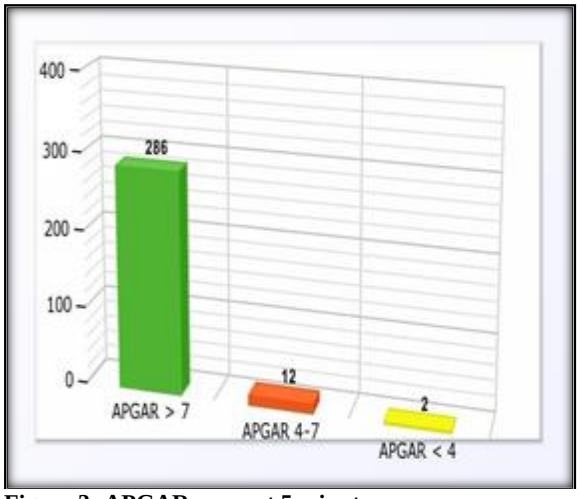

Figure 3: APGAR score at 5 minutes

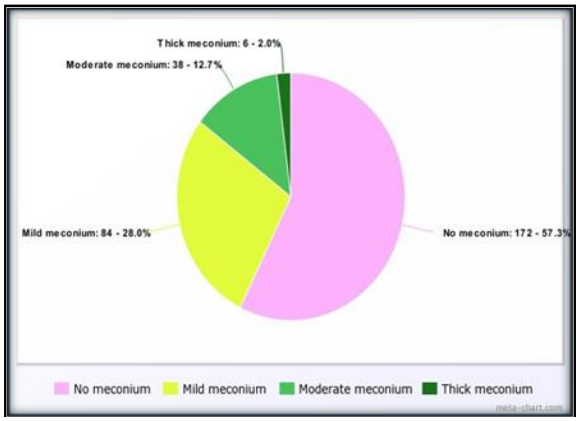

Figure 4: Percentage of meconium stained liquor

Out of 300 neonates, 258 were born with APGAR score more than 7 at 1 minute accounting to 86%. 30 were born with APGAR score between 4 to 7 accounting to 10% and 12 were born with an APGAR score less than 4 accounting to 4%. Out of 300 neonates, 286 had an APGAR score of more than 7 at 5 minutes accounting to 95.3% while 12 had APGAR scores between 4 to 7 accounting to 4% and 2 had APGAR scores less than 4 at 5 minutes accounting to 0.66%.

Out of 300 neonates, 36 neonates were admitted in NICU for various reasons. 2 were stillbirths and hence not included in NICU admissions.

Out of 300 pregnancies, 84 had thin meconium, 38 had moderate meconium and 6 had thick meconium-stained liquor accounting to 28, 12.6 and 2% respectively.

DISCUSSION

The present study was conducted to assess the effect of nuchal cord on labour. This is a prospective clinical study. 300 women who fulfilled the selection criteria were taken into this study.

In this study, 83% of the women were delivered by normal delivery. Gupta et al., conducted a retrospective study on 386 women comparing the mode of delivery between nuchal cord and no nuchal cord group. The rate of vaginal delivery was 70% in women with nuchal cord and 46% in women with no nuchal cord. In a retrospective study conducted by Sheiner E et al regarding the perinatal outcome in pregnancies with nuchal cord comparing pregnancies with nuchal cord and no nuchal cord, the rate of vaginal delivery in the group with nuchal cord was 89.5% while it was 87.3% in the group without nuchal cord. Quintero VH et al., conducted a study a study on outcomes of pregnancies with sonographically detected nuchal cord. The rate of normal delivery was found to be 73% in pregnancies with nuchal cord. Shereen K et al conducted a cross sectional study about the impact of nuchal cord on intrapartum and perinatal outcome. The rate of normal delivery was found to be 64.41% in women with nuchal cord and 64.59% in women with no nuchal cord. The P value was 0.932 and hence the difference was not statistically significant.

In the present study, the rate of Caesarean section was found to be 12.66%. The indications for Caesarean section were either abnormalities in CTG or failure to progress. In the comparative study conducted by Gupta et al, the rate of primary caesarean section was found to be 26.7% in the pregnancies with nuchal cord and 28.2% with no nuchal cord. The P value was found to be 0.8 and hence there was no statistical significance between the rates of Caesarean section between those groups. In a study conducted by Kimitoshi Imai et al the rate of Caesarean section was 2.5% in nulliparous women with single nuchal cord and 3.5% with no nuchal cord. The Caesarean section rate in

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multiparous women with single nuchal cord was 0% and no nuchal cord was 0.1%. In a study conducted by Quintero VH et al, the rate of Caesarean section was 27% in study group with nuchal cord and 25% in the control group with no nuchal cord. The P value was 0.741 and hence the difference in the Caesarean section rate was not statistically significant. In a study conducted by Sheiner E et al, 11.5% of pregnancies with nuchal cord were subjected to Caesarean section and 24.2% of pregnancies with no nuchal cord were subjected to Caesarean section. The P value was 0.001 and hence the difference was statistically significant. In a study conducted by Joshi et al, the Caesarean section rate was found to be 27.65% in the tight nuchal cord group and 22.64% in the loose nuchal cord group. The P value was 0.56 and hence the difference was not statistically significant. In a study conducted by K Shereen et al, the Caesarean section rate was 30.51% in the nuchal cord group and 31.35% in no nuchal cord group. The P value was 0.932 and hence there was no statistically significant difference.

In the present study, the incidence of abnormalities of CTG was 8.33%. In a study conducted by Quintero VH et al, the rate of abnormal CTG was found to be 36% in the nuchal cord and 32% in the control group with no nuchal cord. The P value was 0.487. There was no statistical significance for the difference between the rates of abnormal CTG. In the study conducted by Joshi et al, the rate of abnormal CTG was 34.04% in the group with tight nuchal cord and 7.55% in the group with loose nuchal cord. The P value was 0.0001 and hence the difference was highly significant. The rate of abnormal CTG was 8.51% in the group with single nuchal cord in the study conducted by K Shereen et al.

The incidence of Meconium-stained liquor was found to be 42.6% in the present study. In the study conducted by Gupta et al, the rate of MSL was 6.7% in the group with nuchal cord and 10.4% in the group with no nuchal cord. The P value was 0.37. Hence, there was no significant difference between them. In the study conducted by Quintero VH et al, the incidence of MSL was 17% in the group with nuchal cord while the incidence of MSL was 14% in the control group with no nuchal cord. The P value was 0.655 and hence the difference between the incidences of meconium-stained liquor was not statistically significant. In the study by Kasturi D et al, 26% of the cases with nuchal cord had meconium-stained liquor. In the study conducted by Joshi et al, there was meconium-stained liquor in 36.17% of cases with tight nuchal cord and 13.21% of cases with loose nuchal cord. The P value was 0.001. Hence, there was significantly higher incidence of meconium-stained liquor among pregnancies with tight nuchal cord than loose nuchal cord. The rate of meconium-stained liquor was 8.51% among the pregnancies with single nuchal cord in the study conducted by K sheren et al.

The rate of NICU admission of the neonates born with nuchal cord was 12% in the present study. In the study conducted by Gupta et al, the rate of NICU admission due to fetal distress among the neonates with the nuchal cord was 13.3% and 12.3% in the neonates without nuchal cord. The P value was 0.82. Hence, the high rate of NICU admission in the neonates with nuchal cord was not significant. In the study conducted by Henry et al, the rate of NICU admission was 6.6% in the neonates with tight nuchal cord and 5.9% in the neonates with no nuchal cord. The combined rate was 1.7% In the study conducted by Quintero VH et al, 3% of neonates with nuchal cord and 4% without nuchal cord got admitted into NICU. The P value was 0.487 and hence there was no statistically significant difference between them. 11% of the neonates with nuchal cord got admitted into NICU as per the study conducted by Joshi et al. In the study conducted by K Shereen et al, the rate of NICU admission was 13.56 in the group of neonates with nuchal cord and 13.24% in the control group with no nuchal cord. The P value was 0.947. The difference between the rates of NICU admissions was not statistically significant.[10-14]

CONCLUSION

- Presence of nuchal cord is quite a common occurrence at birth.
- The rate of vaginal delivery was high.
- The rate of adverse events like abnormalities in CTG, prolonged labour, poor APGAR score and perinatal deaths were very less.
- Hence, presence of nuchal cord is not an indication for LSCS unless there are any abnormalities in CTG.

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