Incidence of umbilical cord around the neck and its effects on mode of delivery and fetal outcome at tertiary care hospital

S. Nandhini, C. R. Anuradha, S. Renuka*, K. Vijayalakshmi, R. Sailatha

INTRODUCTION

Incidence of umbilical cord around the neck ranges from lowest being 5 to 37%.1 Presence of umbilical cord around the neck is one of the common findings noted at the time of the delivery. Umbilical cord entangled about 360 degree around the neck is called the nuchal cord. The aim of the study is to find out the incidence of umbilical cord around the neck at the time of delivery and its fetal outcomes.

Background: Umbilical cord is one of the fetal membranes. It is developed from the yolk sac. Umbilical cord is tubular structure. Approximate length of the cord is 50 cm. Umbilical cord around the neck is called as the nuchal cord. The aim of the study is to find out the incidence of umbilical cord around the neck at the time of delivery and its fetal outcomes.

Methods: It is a retrospective observational study. This study was conducted in the department of obstetrics and gynecology at a tertiary care hospital over a period of 6 months (Feb-Jul 2020). Out of 542 patients, 388 were enrolled in this study after the inclusion and exclusion criteria, of which 101 were delivered with umbilical cord and the remaining were 287 patients in control group.

Results: Present study showed 38.4% incidence of umbilical cord at the time of delivery. Incidence is more among the primigravida and it is statistically significant. Both intrapartum and postpartum risks are not related to umbilical cord around the neck. Mean length of the cord in patients delivered with cord around the neck is more when compared to the control group and has significant p value.

Conclusions: This study concludes that the presence of umbilical cord, alone is not an indication for caesarean section. Umbilical cord with 3 loops was associated with increased operative delivery and low Apgar score, proper intrapartum surveillance and portogram leads to good fetal outcome.

Keywords: Incidence of umbilical cord, Mode of delivery, Fetal outcome
In the present study, incidence of cord around and its effects on various modes of delivery and fetal outcomes are studied.

**METHODS**

This study was conducted in Chettinad health city and research center, Kelambakkam over a period of 6 month (Feb-July 2020). Out of 540 total deliveries, during this period, patient was enrolled in this study as per the inclusion and exclusion criteria. This is a retrospective observational study.

**Inclusion criteria**

Inclusion criteria included singleton gestation, cephalic presentation and previous NVD.

**Exclusion criteria**

Exclusion criteria excluded multiple gestations, previous LSCS, patient undergoing elective LSCS, IUFD (intrauterine fetal death).

After this Inclusion and exclusion criteria, patient enrolled in the study, were divided into 2 groups. **Study group**: Delivery with umbilical cord around the neck. **Control group**: Delivery without umbilical cord around the neck.

**Selection of the patient**

Total delivery during the study period: 540, total no of cases: 388 and number of patients delivered with umbilical cord around the neck:101.

**Outcomes studied**

Following outcomes were studied between these two groups are mode of delivery, number of LSCS, Apgar score less than 7 in 1st min and 5th min, NICU admission, length of the cord. Meconium staining of liquor and fetal distress and all the above data are entered using the SPPS software version 2.0.

**RESULTS**

Out of 388 cases, 101 patients (38.4%) cases were found to have cord around the neck. In these 101 cases, 66 cases (65%) had normal vaginal delivery, 27 cases (26%) had caesarean section, and around 8% of the patients had instrumental delivery. The indication for caesarean section was fetal distress and Meconium-stained liquor.

In this study, most of the cases were in the age group of 21-25 at around (55%) (Table 1).

Out of 101 patients with cord around the neck, around 73% were primigravida and 28% patients were multigravida.

Mean length of the cord in patients with cord around the neck is higher than the patient without cord around the neck and it is statistically significant (p=0.01).

Out of 388 cases, 101 cases had cord around the neck, in which the incidence of single loop was high and statistically significant (63%), whereas double loop was 31% and triple loop was 7%.

**Table 1: Distribution of patients according to mode of delivery.**

| MOD       | With cord | Without cord | Total | Chi sq. | P     |
|-----------|-----------|--------------|-------|---------|-------|
| Normal    | 66        | 192          | 258   | 0.009   | 0.9   |
| Instrumental | 8       | 11           | 19    |         |       |
| LSCS      | 27        | 84           | 111   |         |       |
| Total     | 101       | 287          | 388   |         |       |

**Table 2: Age distribution.**

| Age (years) | With cord | Without cord | Total | Chi sq. | P     |
|-------------|-----------|--------------|-------|---------|-------|
| <20         | 11        | 22           | 33    | 2.02    | 0.2   |
| 21-25       | 55        | 147          | 202   |         |       |
| 26-30       | 24        | 76           | 100   |         |       |
| 31-35       | 8         | 28           | 36    |         |       |
| 36-40       | 3         | 14           | 17    |         |       |
| Total       | 101       | 287          | 388   |         |       |

**Table 3: Distribution of patients according to parity and cord around the neck.**

| Parity | With cord | Without cord | Total | Chi sq. | P     |
|--------|-----------|--------------|-------|---------|-------|
| Primi  | 73        | 155          | 228   | 10.29   | 0.001 |
| Multi  | 28        | 132          | 160   |         |       |
| Total  | 101       | 287          | 388   |         |       |

**Table 4: Comparison of length of cord in both groups.**

| Length               | With cord | Without cord | P     |
|----------------------|-----------|--------------|-------|
| Mean length of cord (cm) | 45.39     | 44.64        | 0.01  |

**Table 5: Distribution of both the groups according to Apgar score and NICU stay.**

| APGAR | With cord (n=101) | Without cord (n=287) | Z   | P     |
|-------|-------------------|-----------------------|-----|-------|
| <7 in 1 min | 7               | 10                    | 2.12| 0.1   |
| <7 in 5 min | 3               | 5                     | 0.56| 0.5   |
| NICU   | 25                | 50                    | 2.57| 0.1   |
| MSL    | 21                | 46                    | 1.19| 0.3   |
Other studies like Walker et al, found male babies had longer cord than female babies and it was assumed due to higher level of intrauterine activities of male fetus. Present study also observed that the proportion of males were significantly more than female among the neonates born with umbilical cord around the neck, but was not significant.

**Limitations**

The factors such as true knot, cord around the trunk and limbs found to interrupt the results of the study.

**CONCLUSION**

According to our study, the incidence of umbilical cord around the neck is 38.4%. Identification of umbilical cord at the time of delivery is not an indication for caesarean section. Such patients are to be closely monitored by CTG. Multi centric approach during the labour aids in better perinatal outcomes and decreases caesarean section and instrumental delivery. This study clearly shows that there is no change in the mode of delivery when there is umbilical cord around the neck.

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