



## A CLINICAL STUDY OF FETOMATERNAL OUTCOME IN CASES OF UMBILICAL CORD AROUND THE NECK

### Gynaecology

**Dr. Madhubala Chouhan**

Professor & Unit Head Department of Obstetrics & Gynaecology, RNT Medical College, Udaipur

**Dr. Dhannaram Rewar\***

Resident Department of Obstetrics & Gynaecology, RNT Medical College, Udaipur  
\*Corresponding Author

### ABSTRACT

**Introduction:** The aim of every obstetrician is to deliver the parturient in the safest way possible with minimum risk to the mother and newborn. Entanglement of umbilical cord around the foetal neck (nuchal cord) is a common finding at delivery.

**Objectives Of Study:** To study foetal outcome in form of fetal morbidity (in form of foetal distress during labour) and mortality.

**Materials And Methods :** The 200 cases with no cord around the neck were considered as control groups with same inclusion and exclusion criteria of case groups.

**Result :** Male foetus (53.5%) had slightly more incidence of cord around the neck. Perinatal mortality was 4% with cord around the neck compared to 1% of control group. The relation of length of umbilical cord to the occurrence of nuchal cord entanglement was highly significant ( $P = 0.0016$ ). Tight cord was factor in causing foetal distress in 62.96% and only 4.62% had foetal distress with loose cord.

**Conclusion :** The presence of a nuchal cord per se is not found to be an indication of operative delivery. Findings of this study suggest that vaginal delivery can be attempted in spite of this ultrasonographic awareness. However, such patients require close monitoring during labour, preferably by continuous electronic fetal heart rate monitoring as well as strict maintenance of partogram.

### KEYWORDS

#### INTRODUCTION:

The aim of every obstetrician is to deliver the parturient in the safest way possible with minimum risk to the mother and newborn. Entanglement of umbilical cord around the foetal neck (nuchal cord) is a common finding at delivery. It is often assumed that nuchal cord causes cord compression and thus low birth weight and intra-partum complications occurs. The assumption that nuchal cord entanglement could cause cord compression and thus intra-partum complication is not recent.

Encirclement of umbilical cord around foetal neck (nuchal cord) is a rather common occurrence, and whether it is related to increased foetal morbidity and mortality is controversial. The pathophysiology of umbilical cord around the foetal neck and cord entanglement is that when the umbilical cord is acutely compressed, foetal arterial resistance and blood pressure abruptly increase causing bradycardia and fall in cardiac output. If the cord compression is not prolonged, the FHR and metabolic status can rapidly normalise because of diffusion of carbon dioxide across the placenta. Although the presence of a nuchal cord is not the matter of much apprehension and anxiety because of currently available obstetrical resources, appropriate and timely management of this situation are helpful in improving neonatal outcome.

#### AIMS AND OBJECTIVES OF STUDY

- To study foetal outcome in form of fetal morbidity (in form of foetal distress during labour) and mortality.

#### MATERIALS AND METHODS

A Prospective study was done on patient admitted and managed in labour room of Pannadhy Zanana Hospital, RNT Medical College Udaipur. Present study was conducted on 200 cases as per proforma attached and compare with control group.

#### SUBJECTS FOR STUDY:

Study will include 200 cases with cord around the neck. The cases were selected from May 2017 to Dec 2017 with following inclusion and exclusion criteria.

#### CONTROL GROUP:

The 200 cases with no cord around the neck were considered as control groups with same inclusion and exclusion criteria of case groups.

#### Inclusion criteria:

Singleton pregnancies of 37-42 weeks gestation with Cephalic presentation and who gave consent are selected randomly.

#### Exclusion criteria:

Patients with any risk factors like preeclampsia, eclampsia, congenital anomaly, preterm delivery, multi-fetal gestation, anemia and previous cesarean and who did not give consent etc.

A prospective study was done on 200 cases with cord around the neck and 200 controls without cord around the neck.

#### RESULT AND DISCUSSION

**Table- 1: Distribution of cases according to sex of new born**

Sex of newborn	No. of cases in present study	%	No. of cases in control group	%
Male	107	53.5	90	45
Female	93	46.5	110	55

Tables -1 depicts that the Male foetus (53.5%) had slightly more incidence of cord around the neck. Walker and Pye<sup>1</sup> (1960) also found the similar results.

**Table-2: Comparison of condition of foetus at birth (Perinatal mortality)**

Condition of foetus	No. of cases in present study	%	No. of cases in control group	%
Live	194	97	199	99.5
SB	6	3	1	0.5
Perinatal mortality	6+2=8	4	1+1=2	1

Out of 200 in study group the 6 newborns were born dead and 15 were shifted to nursery and 2 died within 14 days while in control group one newborn was born dead and 7 were shifted to nursery and one died within 14 days. So perinatal mortality was 4% (8/200) with cord around the neck compare to 1% of non coiling group (control group). Shrestha N.S. et al<sup>2</sup> (2007) stated that nuchal cord is not associated with adverse perinatal outcome. Kan and Eastman<sup>3</sup> also noted that coiling of cord around the neck is an uncommon cause of foetal death. Shui and Fastman<sup>4</sup> (1957) expressed that foetal loss was not higher in coiled cases rather he reported more loss in non coiled 2.6% as compared to coiled ones of 1%.

**Table-3: Number of cases with various of loops with different length of cord**

Length of cord	No. of loop			Total no. of cases
	1	2	≥ 3	
<40	10	0	0	10
41-50	69	0	0	69
51-60	57	31	0	88

61-70	3	9	10	22
>70	1	4	6	11
Mean cord length (cm)	51.92%	59.21%	72.52%	Total =200

Tables-3 shows that the relation of length of umbilical cord to the occurrence of nuchal cord entanglement was highly significant ( $P = 0.0016$ ). Length of umbilical cord was one of the most important determinants for the occurrence of nuchal cord and number of loops. This fact has been observed by almost all the workers in various studies. In a study by Kan-Pun-Shui and Eastman<sup>4</sup> of 1000 cases, it was found that increasing length of umbilical cord was associated with increased number of loops. Chatterjee and Gupta<sup>5</sup> also observed that increase in the length of umbilical cord was also associated with increased number of loops.

Joshi K et al<sup>6</sup> (2017) also found the similar relation in length of cord and number of loop around the neck. This is because it is easier for a lengthy umbilical cord to be entangled in nuchal grooves because of its surplus mobility.

#### Table- 4 : Comparison of tight and loose cord in causing Foetal Distress

The above table shows that tight cord was factor in causing foetal distress in 62.96% and only 4.62% had foetal distress with loose cord.

Table - 4 shows that 62.96% (17/27) cases with tight cord showed the evidence of foetal distress, while 4.62% (8/173) cases with loose cord showed the evidence of foetal distress. 37.04% (10/27) cases with tight cord had no evidence of foetal distress, while 95.38% (165/173) cases with loose cord had no evidence of foetal distress. In control only 2% evidence of foetal distress.

The above discussion shows that foetal distress increase in cases of cord around the neck as compared to controls without cord around the neck and among cord around the neck. The foetal distress is more statically significant ( $P$  value  $<0.001$ ) in tight loop of cord around the neck compare to loose cord around the neck (62.96 v/s 4.62).

Joshi K et al<sup>6</sup> (2017) and Mahendra G et al<sup>7</sup> (2015) have reported the similar results.

#### CONCLUSION

The presence of a nuchal cord per se is not found to be an indication of operative delivery. Findings of this study suggest that vaginal delivery can be attempted in spite of this ultrasonographic awareness. However, such patients require close monitoring during labour, preferably by continuous electronic fetal heart rate monitoring as well as strict maintenance of partogram.

At present, expertise to diagnose multiple and tight loops on USG are limited, which should be the aim for future. Multicentric and large studies are further required in association with more specific and sensitive diagnostic aid for tight and multiple loops so as to provide best perinatal management with good foetal outcome.

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