

# NUCHAL ENCIRCLEMENT OF THE UMBILICAL CORD—INCIDENCE AND SIGNIFICANCE

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## SUMMARY

A retrospective study was done on 2200 deliveries conducted in Medical College and Hospital, Rohtak to evaluate the incidence and effects of nuchal cord on the foetus and labour. The incidence observed was 10.9 per cent. An increase in rate of operative delivery, instrumentation, foetal distress and perinatal mortality was observed in cases with nuchal cord. It was directly proportional to the number of loops and tightness of the loops.

### Introduction

The reported incidence of nuchal encirclement of umbilical cord is from 6.7 to 29 per cent (Gardiner, 1922). There is divergence of opinion on the effect of nuchal coils of cord on foetus. Shui and Eastman (1957), Howitz *et al* (1964) and Sinnathuray (1966) have found no increase in foetal distress and perinatal mortality, while Harrer and Buchman (1957) and Fisher (1964) have reported an increased incidence of foetal distress and perinatal mortality. In view of this a study was conducted to evaluate the incidence and effects of nuchal cord on the foetus and labour.

### Material and Methods

A retrospective study was done on 2200 deliveries conducted in Medical College

and Hospital, Rohtak. The data was analysed on the following lines:

- (a) Presence or absence of nuchal cord at each delivery.
- (b) Number of loops of cord.
- (c) Whether tight or loose.
- (d) Mode of delivery.
- (e) Any evidence of foetal distress.
- (f) Perinatal mortality.

The criteria for foetal distress in this study were as follows:

- Any record of foetal heart rate above 160 beats per minute or below 120 beats per minute or irregular.
- Passage of meconium during labour (except in cases of breech presentation).
- Post delivery evidence passage of meconium (e.g. membranes, cord or infant meconium stained or meconium in hind waters).
- Apgar score of less than eight out of ten at one minute.

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The group with one loose loop of cord around the neck was considered as control group for comparison purposes.

### Observations and Results

#### Incidence of Nuchal Cord

The overall incidence was 10.9% (240 cases out of 2200 deliveries). The distribution of cases is as shown in Table I (Insert Table I).

TABLE I

No. of loops	No. of cases	Percentage
One loop:		
—Loose	153	63.8
—Tight	35	14.6
Two loops	37	15.4
Three loops	12	5.0
Four loops	2	0.83
Five loops	1	0.42

#### Mode of delivery

Table II depicts the percentage of cases requiring operating intervention in each group. An interrupted second stage was taken as a parameter of prolonged labour. The incidence was maximum in cases with one tight loop followed by three loops.

TABLE II

No. of loops	Vacuum delivery	LSCS
One loop:	%	%
—Loose	2.7	0.7
—Tight	38.2	0
2 loops	5.4	0
3 loops	36.4	8.3
4 loops	0	50
5 loops	0	100

#### Foetal distress and Apgar scoring

Meconium staining of hind waters, baby or placenta with normal Apgar scoring or an Apgar score of 7 or 8 was considered as evidence of mild asphyxia. Apgar score of 5 and 6 as moderate asphyxia, while a score of less than 4 was taken as severe asphyxia.

TABLE III

No. of loops	Mild	Moderate	Severe
One loop:	%	%	%
—Loose	6	0.7	0
—Tight	32.4	8.8	11.8
Three loops	8.3	5.6	13.9
Two loops	9.1	0	18.2

Out of two cases with four loops one underwent caesarean section due to foetal distress, whereas other delivered vaginally with normal Apgar. The only case with five loops around the neck was delivered by elective caesarean section for contracted pelvis.

#### Perinatal mortality

It was observed that more the number of loops and tighter the loops, more was the perinatal mortality (Table IV).

TABLE IV

No. of loops	Perinatal mortality
One loop:	%
—Loose	0
—Tight	5.8
Two loops	8.3
Three loops	9.1
Four loops	0
Five loops	0

#### Discussion

In modern obstetrics the historical interest in nuchal loops should not arouse



undue apprehension and anxiety. It is unlikely that foetal death due to cord entanglement ever occurs without preceding changes in foetal heart rate (Tipton and Chang, 1971). The importance therefore is of detection of changes in foetal heart rate at the earliest. Direct auscultation may not be adequate. With continuous monitoring techniques timely intervention can bring down the perinatal mortality to the same level as in those without any loop of cord around the neck. Thus a successful vaginal delivery may be anticipated in most patients with this problem.

References

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TABLE I

Group	Number	Mean	Standard Deviation
1	10	1.2	0.5
2	15	1.5	0.6
3	20	1.8	0.7
4	25	2.1	0.8
5	30	2.4	0.9

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TABLE II

Group	Number	Mean	Standard Deviation
1	10	1.5	0.6
2	15	1.8	0.7
3	20	2.1	0.8
4	25	2.4	0.9
5	30	2.7	1.0

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