

Nuchal Cord Entanglements in the Cases Delivered by Cesarean Section Because of Fetal Distress

FETAL DİSTRES NEDENİYLE SEZARYEN İLE DOĞURTULAN BEBEKLERDE BOYNA KORD DOLANMALARI

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Summary

Objective: The incidence of umbilical cord entanglement in fetuses delivered by cesarean with a diagnose of fetal distress is investigated.

Institution: Zübeyde Hanım Maternity Hospital-Ankara.

Material and Method: 107 low-risk patients who were delivered after 37th gestational week by cesarean for fetal distress are studied.

Findings: Of these cases 69 (64.48 %) had a positive CST or OCT, 38 (35.41 %) had variable decelerations. In the CST or OCT positive group there were 22 single, 9 double and 4 triple cord entanglements. In the group with variable decelerations there were 13 single, 11 double and 6 triple cord entanglements.

Results: Though multiple cord entanglements can not explain the fetal distress in OCT or CST positive cases, they can explain the persistent variable deceleration patterns. The cases with double or triple cord entanglements are in high risk for fetal distress.

Key Words: Fetal distress, Cord entanglement

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An umbilical cord entanglement around the fetal neck affects 23% to 33% of all pregnancies and is generally considered benign (1-3). However, the occurrence of a single nuchal cord entanglement is associated with an increased rate of variable fetal heart rate (FHR) decelerations during the first and second stages of labor and an increased rate of umbilical

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Özet

Amaç: Fetal distres tanısıyla sezaryenli doğurtulan bebeklerde umbilikal kord dolanma sıklığı araştırıldı.

Çalışmanın Yapıldığı Yer: Zübeyde Hanım Doğumevi-Ankara.

Materyal-Metod: 37 haftasını doldurmuş, herhangi bir risk faktörü bulunmayan ve sadece fetal distres nedeniyle sezaryenli doğurtulan 107 olgu çalışmaya grubuna alındı.

Bulgular: Vakaların 69'unda (% 64.48) CST veya OCT pozitif, 38 (% 35.41) vakada ise variabl deselerasyon vardı. CST ve OCT pozitif grupta 22 tek, 9 çift, 4 üçlü kordon dolanması vardı. Variabl deselerasyonlu grupta ise 13 tek, 11 çift, 6 üçlü kordon dolanması vardı.

Sonuç: Multipl kordon dolanmaları OCT ve CST pozitif vakalarda fetal distresi açıklayamamakla birlikte, persiste variabl deselerasyon bulgularını açıklamaktadır. 2 ya da 3 defa kordon dolanması olan vakalar fetal distres açısından yüksek riskle karşı karşıyadırlar.

Anahtar Kelimeler: Fetal distres, Kordon dolanması

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artery acidemia (4-7). Although rare, fetal death is associated with a nuchal cord entanglement (8).

The presence of two or more loops of cord around the fetal neck has been reported to affect between 2.5% to 8.3% of all pregnancies (1,2).

The purpose of this investigation was to assess the impact of the nuchal cord entanglement on tococardiographic findings and on immediate neonatal outcomes.

Materials and Methods

Woman-infant pairs in this investigation were delivered by cesarean section at our hospital in

1995. The study population consisted of pregnancies with positive or variable OCTs or CSTs.

Criteria for inclusion included a cephalically presenting singleton pregnancy undergoing labor after 37 weeks. Pregnancies complicated by prior cesarean section, active intrauterine infection, severe congenital anomalies abnormal fetal lies, post-maturity and hypertensive disorders were excluded.

Statistical analysis was performed by student's t test. Statistical significance was determined by a $p < 0.05$.

Results

Of the 107 patients eligible for investigation, 69 (64.48%) had positive OCTs or CSTs (group A) and 38 (35.51 %) had variable decelerations (group B). Of the 69 infants in group A, 22 had single, 9 had double and 4 had triple nuchal cord entanglement (31.88%, 13.04% and 5.79%, respectively). Of the 38 infants in group B, 13 had single, 11 had double and 6 had triple nuchal cord entanglement (34.21%, 28.94% and 15.78%, respectively) (Table 1).

In group A, 9 infants (13.04%) had 1 minute Apgar scores which were lower than 5 and no in-

fant had an 5 minute Apgar score lower than 7. In the same group, there was thick meconium in 3 cases with single, 2 cases with double and 2 cases with triple nuchal cord entanglement (4.34%, 2.89% and 2.89% respectively). In group B, there were 3 infants who had 1 minute Apgar scores lower than 5 (7.89%) and there was no infant who had a 5 minute Apgar score lower than 7. In this group, there was thick meconium in 2 cases with single, 3 cases with double and 6 cases with triple nuchal cord entanglement (5.26%, 7.89% and 15.78% respectively) (Table 2, 3 and 4).

There was no neonatal complication in both of the groups during 2 weeks after birth.

Comment

The significance of umbilical cord entanglement is not clearly defined. Shui and Eastman and others state that this commonly found complication is not apparently associated with increased perinatal losses, other authors claim that when single or multiple loops encircle the neck or body there is an increased perinatal loss (5).

Table 1. Nuchal Cord Entanglements in Group A and B.

	Single Nuchal Cord Entanglement	Double Nuchal Cord Entanglement	Triple Nuchal Cord Entanglement
Group A (n=69)	22 (31.88%)	9 (13.04%)*	4 (5.79%)**
Group B (n=38)	13 (34.21 %)	11 (28.94%)*	6(15.78%)**

Group A: OCT-CST (+); Group B: Variable decelerations.

* and **: $p < 0.05$.

Table 2. Neonatal Outcome in Group A: (OCT-CST positive).

	No Nuchal Cord	Single Nuchal Cord	Double Nuchal Cord	Triple Nuchal Cord
1 minute Apgar score<5	1	3	3	2
5 minute Apgar score<7	0	0	0	0

Table 3. Neonatal Outcome in Group B (Variable decelerations).

	No Nuchal Cord	Single Nuchal Cord	Double Nuchal Cord	Triple Nuchal Cord
1 minute Apgar score<5	0	0	2	1
5 minute Apgar score<7	0	0	0	0

Table 4. Thick Meconium in the Amniotic Fluid.

	single n. cord entanglement	double n. cord entanglement	triple n. cord entanglement
Group A	3(4.34%)	2(2.89%)*	2(2.89%)**
Group B	2(5.26%)	3(7.89%)*	6(15.78%)**

n.:nuchal

* and **:p<0.05.

Entanglement of the umbilical cord around the fetal neck complicates approximately one-fourth of pregnancies and has been reported generally to do no harm. However, others have associated the occurrence of a nuchal cord with variable fetal heart rate decelerations in both the first and second stages of labor. Variable decelerations can be caused by umbilical cord compression (1,4,6,7). Initially, such compression can cause fetal respiratory acidemia due to hypercarbia, which can then normalize rapidly if umbilical cord obstruction is relieved. However, in the extreme cases reported by Stembera and Horska and Bretscher and Salinger, neonates with nuchal cords had umbilical arterial metabolic acidemia. Thus, the significance of a nuchal cord and the ability of continuous electronic fetal monitoring to detect early fetal jeopardy and to direct appropriate labor management, particularly second-stage intervention, have not been established (4).

The purpose of our investigation was to determine the nuchal cord entanglements in the patients who were delivered by cesarean section because of the fetal distress indication. In our study population, the incidence of the multiple nuchal cord entanglement was 28.03 %. In the cases with a positive OCT or CST the incidence of multiple nuchal cord entanglement was 18.81 %. In the cases with variable decelerations, the incidence of the multiple nuchal cord entanglement was 44.73 %.

Although Shui and Eastman found the occurrence of multiple nuchal cord entanglement as 2-3% in general population, in our positive OCT or CST group the incidence was 18.84% (1,5). Diagnosing fetal distress by monitorization causes this high incidence. The occurrence of multiple cord entanglements in cases with variable decelerations

is higher compared to cases with a positive OCT or CST. The difference is statistically significant.

Although, it has been reported that cord entanglements are related with 5-minute Apgar scores below 7 (4), there are also some controversial reports (1). In our study group none of the newborns had a 5 minute Apgar score below 7. These high Apgar scores may be related to the early delivery by cesarean section. As reported in literature (1), there were 1-minute Apgar scores below 5. These were frequent in OCT or CST (+) group.

The nuchal cords have been reported to increase the frequency of fetal distress in labor. The usual occurrence of meconium-stained fluid is reported 1,7 percent to 6 percent (1). The presence of meconium staining of the amniotic fluid is said to occur two to seven times more with nuchal coils (1). In our cases with multiple cord entanglements and variable decelerations, the incidence of thick meconium in amniotic fluid is high.

Although the multiple nuchal cord entanglement does not explain the fetal distress in the group with positive OCT or CST, it can explain the finding of persistent variable FHR decelerations and it seems that multiple (double or triple) nuchal cord entanglement can be associated with a greater risk of fetal distress.

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