

Umbilical Cord Abnormalities Observed During Caesarean Delivery

SEZARYEN DOĞUM ESNASINDA GÖZLENEN UMBİLİKAL KORDON ANORMALLİKLERİ

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Summary

Objective: This study aimed to determine the incidence of umbilical cord abnormalities in babies delivered by caesarean section at Harran University Obstetrics and Gynecology Department, to document the type of abnormality and to explore any relationship between this and demographic characteristics of the mother, type of procedure, fetal weight and Apgar scores.

Material and Methods: The files of 655 patients undergoing caesarean delivery from January 1999 to November 2003 were studied retrospectively and 62 cases of umbilical cord abnormality identified as umbilical cord entanglement, true knot or a combination. Data on demographic characteristics of the mothers, type of caesarean section, type of anesthesia, fetal sex, fetal weight and Apgar scores were abstracted and analyzed for statistical significance using the SPSS package and ANOVA or Kruskal-Wallis tests for comparison of findings. A value of $p < 0.05$ was considered statistically significant.

Results: Umbilical cord abnormalities were observed in 62 cases of 655 caesarean deliveries performed during the period (9.4%). The incidence of umbilical entanglement was 6.7% (44/655; 70.9% of umbilical cord abnormality), of true umbilical knots 2.1% (14/655; 22.5% of umbilical cord abnormality), and of umbilical cord entanglement + umbilical knot 0.6% (4/655, 6.4% of umbilical cord abnormality). Of the entanglements, 52.2% (23/44) were single nuchal cord, but in the group with entanglements associated with umbilical knots (Group 3), all entanglements were multiple. No statistical difference was found between the three groups for any of the parameters studied and there was no association between the presence of umbilical cord abnormality and fetal growth restriction or Apgar score.

Conclusion: The type of umbilical cord abnormality was not related to any of several variables studied. Umbilical cord entanglement and/or knot was a fairly common incidental finding during caesarean delivery but had no apparent effect on mortality or morbidity of the newborn.

Key Words: Umbilical cord entanglement,
Umbilical cord knot,
Caesarean delivery

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Özet

Amaç: Bu çalışmada, Harran Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Kliniğinde, sezaryen ile doğan bebeklerdeki umbilikal kordon anormallikleri insidansı ve tiplerinin belirlenerek bunların, annenin demografik karakteristikleri, sezaryen operasyonu tipi, fetal ağırlık ve Apgar skorları arasındaki ilişkinin gösterilmesi amaçlandı.

Gereç ve Yöntemler: Ocak 1999 ve Kasım 2003 tarihleri arasında sezaryenle doğum yapan 655 gebenin kayıtları, retrospektif olarak incelendi. Olguların 62'sinde umbilikal kordon dolanması, gerçek umbilikal düğüm veya ikisinin birlikte bulunduğu umbilikal kordon anormalliği saptandı. Annelerin demografik özellikleri, sezaryen operasyonu tipi, anestezi tipi, fetal cinsiyet ve ağırlık ile Apgar skorları bulguları, SPSS paket programında ANOVA ve Kruskal-Wallis testleri kullanılarak karşılaştırıldı. $P < 0.05$ istatistiksel olarak anlamlı kabul edildi.

Sonuçlar: Umbilikal kordon anormalliği 655 sezaryen doğumun 62'sinde (%9.4) gözlemlendi. Umbilikal kordon dolanması insidansı %6.7 (44/655; umbilikal kordon anormalliklerinin %70.9'u), gerçek umbilikal düğüm %2.1 (14/655; umbilikal kordon anormalliklerinin %22.5'i), umbilikal kordon dolanması + umbilikal düğüm %0.6 (4/655; umbilikal kordon anormalliklerinin %6.4'ü) olarak bulundu. Kordon dolanmalarının %52.2'si (23/44) tek nukal kord idi, ancak dolanma ile birlikte düğüm olan grupta (Grup 3), kordon dolanmalarının tümü çoğuldu. Üç grup arasında, incelenen parametrelerin hiçbiri için istatistiksel fark bulunmadı ve umbilikal kordon anormalliği ile fetal gelişme geriliği veya Apgar skorları arasında ilişki saptanmadı.

Tartışma: Umbilikal kordon anormalliği tipi ile incelenen çeşitli değişkenler arasında ilişki yoktur. Umbilikal kordon dolanması ve/veya kordon düğümü, sezaryen doğumlarda oldukça sık tesadüf edilen bir bulgudur ama yenidoğan mortalite ve morbiditesine belirgin bir etkisi yoktur.

Anahtar Kelimeler: Umbilikal kordon dolanması,
Umbilikal kordon düğümü,
Sezaryen doğum

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Umbilical entanglements and knots are commonly observed during births (1, 2). These may arise either in utero or during the birth process (3). On the other hand, such abnormalities may be undone by the mechanics of birth (4, 5). This study analyzed caesarean deliveries as a means of eliminating effects due to the birthing process itself.

Umbilical knots are considered a more serious risk factor for the fetus than are umbilical entanglements (6). This study therefore looked for correlations between umbilical entanglements, umbilical knots and the combination and various demographic and procedural variables.

Materials and Methods

The files of 655 patients undergoing caesarean delivery from January 1999 to November 2003 were studied retrospectively and 62 cases of umbilical cord abnormality identified as umbilical cord entanglement, true knot or a combination. Data on demographic characteristics of the mother, type of caesarean section, type of anesthesia, fetal sex, fetal weight and Apgar scores were abstracted and analyzed for statistical significance using the SPSS package and ANOVA or Kruskal-Wallis tests for comparison of properties.

Results

Umbilical cord abnormalities were observed in 62 cases of 655 caesarean deliveries performed during the period (9.4%). The incidence of umbilical entanglement was 6.7% (44/655; 70.9% of umbilical cord abnormality), of true umbilical knots 2.1% (14/655; 22.5% of umbilical cord abnormality), and of umbilical cord entanglement +

umbilical knot 0.6% (6.4% of umbilical cord abnormality). Of the entanglements, 52.2% (23/44) were single nuchal cord, but multiple and single, tight and loose entanglements around neck, body and legs were found. In the group with entanglements associated with umbilical knots, all entanglements were multiple.

No statistical difference was found between the three groups for any of the parameters studied (Table 1) and there was no association between the presence of umbilical cord abnormality and fetal growth restriction or Apgar score (Table 2).

Discussion

An umbilical cord accident occurs when umbilical venous or umbilical arterial blood flow is compromised to a degree that it leads to fetal injury or death and is regarded as the most common cause of intra-uterine fetal death in the third trimester (7, 8).

Despite this, umbilical entanglements and knots are commonly found in deliveries of healthy babies. For example, Carey and Rayburn (7) reported that, over a five year period in their institution, a single nuchal cord was observed in 23.6% of all deliveries, both live and stillborn. This figure is far higher than the 3.5% found in our series and suggest that a large percentage of such abnormalities may be formed either very late in pregnancy or during the birth process itself.

In another study, Sornes (2) determined the incidence of umbilical knots to be 1% and the knot-associated mortality rate to be 2.7%. Another recent large study (6) placed the occurrence of true knot at 1.2%. Both these incidence figures are

Table 1. Baseline characteristics of subjects

	Group 1 Umbilical entanglement (n=44)	Group 2 Umbilical knot (n=14)	Group 3 Umbilical entanglement + Umbilical knot (n=4)	<i>p</i>
Age (year)	29.4±5.5	31.2±5.7	29.5±2.6	NS
Gravidity	3.4±1.9	4.1±2.9	2.3±0.9	NS
Parity	2.1±1.8	2.3±1.7	1.3±0.9	NS
Alive	2.0±1.8	2.1±1.6	1.3±0.9	NS
Abortus	0.2±0.5	0.7±0.7	0.0±0.0	NS
Previous C/S	0.4±0.6	0.3±0.4	0.8±0.9	NS
Gestational age (week)	38.3±3.1	38.7±3.0	38.0±4.0	NS

Values expressed as means ± SD, NS, not significant

Table 2. Comparison of umbilical cord abnormality cases based on caesarean delivery, anesthesia, fetal gender, fetal weight and Apgar scores variables.

	Group 1 Umbilical entanglement (n=44)	Group 2 Umbilical knot (n=14)	Group 3 Umbilical entanglement + Umbilical knot (n=4)	p
Type of caesarean				
elective	21 (47.7%)	5 (35.7%)	4 (100%)	NS
emergency	23 (52.3%)	9 (64.3%)	–	NS
Type of anesthesia				
general	26 (59.1%)	3 (21.4%)	4 (100%)	NS
regional	18 (40.9%)	11 (78.6%)	–	NS
Fetal gender				
male	25 (56.8%)	8 (57.1%)	1 (25%)	NS
female	19 (43.2%)	6 (42.9%)	3 (75%)	NS
Fetal weight (gr)	3544.3±776.4	3539.3±702.7	3162.5±840.0	NS
Apgar 1 min.	7.0±1.9	7.0±2.0	6.2±4.2	NS
Apgar 5 min.	8.5±1.9	8.6±1.7	7.0±4.7	NS
Apgar 10 min.	9.1±1.6	9.2±0.9	7.3±4.9	NS

Values expressed as means ± SD,

NS, not significant

lower than our finding of 2.1% but not significantly so. The second cited study found an association between umbilical knot and male gender; there was no significance difference in our study.

Numerous published reports have identified umbilical cord morphology and abnormalities with ultrasound (9-12). However, as shown by our report and others, only relatively few such abnormalities result in detriment to the fetus and such a finding in isolation should certainly not be grounds for intervention. Where an umbilical cord accident is considered likely, measurement of umbilical cord blood flow with color Doppler techniques would be the most appropriate investigation (13, 14).

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