

Knot at Our Hospital-Case Report(s)

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Introduction

True umbilical cord knots (UCKs) have been investigated for their role in fetal death, premature birth, low birth weight, low Apgar scores, and other measurable outcomes. In one study, 0.3%-1.3% of all pregnancies were affected by UCK and found to be associated with advanced maternal age, multiparity, spontaneous abortion, polyhydramnios, obesity, chronic hypertension, and diabetes mellitus.¹ An UCK may have profound implications for the well-being of the fetus. Recently, two cases of UCKs were observed at our institution over a fifteen-month period.



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Case Report(s)

Case 1

25 y/o parturient G2 P1(1,0,0,1), BMI 50 kg/m², EGA 39 weeks, underwent cesarean section for failure to dilate and potential fetal macrosomia (estimated weight 9 lbs. and 11 oz.). Medical history included class III obesity (BMI > 40). A labor epidural was in place for the anticipated vaginal delivery, but was extended successfully for cesarean delivery. The fetus was delivered without difficulty and presented with a nuchal cord and a true knot in the mid portion of the umbilical cord. Apgar score: 9/9 at 1 and 5 minutes. Birthweight: 8 lbs. 9 oz. (Fig. 1)

Case 2

30 y/o parturient G3P2(2,0,0,3), BMI 71, EGA 39 weeks with prior cesarean section, in labor, declined vaginal birth (VBAC). Past medical history included gestational diabetes and class III obesity. Spinal anesthesia was administered. After delivery, a true knot was noted in the mid section of the umbilical cord. Apgar score: 9/9 at 1 and 5 minutes. Birthweight: 8 lbs. 15 oz. (Fig. 2)



Fig. 1



Fig. 2

Discussion

True UCKs are uncommon and may lead to fetoplacental insufficiency. A knot alone may not have clinical significance, or its clinical significance correlates with tightness of the knot. Logically, tightness restricting flow restriction can be detrimental to pregnancy outcome.² Clinical manifestations initially can be silent, becoming unpredictable as fetal descent leads to tightening, necessitating rapid operative delivery. Ultrasonography has low sensitivity in detecting cord knots; enhancing the possibility of being missed prenatally. However, color doppler and three-dimensional imaging may be very helpful. Currently, there is no intervention to loosen a cord knot or ameliorate its potential danger. Antenatal management relies on careful fetal monitoring and high suspicion for cord compromise. In the cases presented, the fetal heart tones remained normal and there was no reason to suspect cord knots.

Learning Points:

In these case reports, both patients manifested minor clinical associations for UCKs; thus, the UCK presentations were *unexpected*, highlighting the necessity of antenatal screening even in low probability pregnancies for UCKs. As normal umbilical cord function and structure are important for fetal health, the favorable clinical outcomes in these cases should not negate prenatal cord evaluation, for such a life-threatening condition. If this anomaly is detected by antenatal scans the pregnancy should be deemed high risk and additional vigilance implemented to protect the fetus and mother. These measures include but are not limited to utilizing frequent ultrasound scans, cord doppler studies, and fetal movement assessments, and certainly, establishing a lower threshold for operative delivery.

References

- 1 Int J Gynaecol Obstet 2013 18-21
- 2 Obstetrics 2024 559-566