



Contents lists available at ScienceDirect

Taiwanese Journal of Obstetrics & Gynecology

journal homepage: www.tjog-online.com

Research Letter

Prenatal diagnosis of a true umbilical cord knot in a fetus with intrauterine growth restriction and placenta accreta



André Campos da Cunha ^a, Rosilene da Silveira Betat ^a, Thaís Kappel Vieira Dal Pai ^b,
Camila Pauluci Arcolini ^b, Amanda Muriela Gobatto ^b, Anna Manoela de Holleben Bicca ^b,
Paulo Ricardo Gazzola Zen ^{c,d}, Rafael Fabiano Machado Rosa ^{a,c,d,e,*}

^a Fetal Medicine, Hospital Materno Infantil Presidente Vargas (HMIPV), Porto Alegre, RS, Brazil

^b Graduation in Medicine, Universidade Luterana do Brasil (ULBRA), Canoas, RS, Brazil

^c Graduate Program in Pathology, Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA), Porto Alegre, RS, Brazil

^d Clinical Genetics, Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA) and Complexo Hospitalar Santa Casa de Porto Alegre (CHSCPA), Porto Alegre, RS, Brazil

^e Clinical Genetics, Hospital Materno Infantil Presidente Vargas (HMIPV), Porto Alegre, RS, Brazil

ARTICLE INFO

Article history:

Accepted 26 February 2015

Dear Editor,

Here, we report a rare case of prenatal diagnosis of a true umbilical cord knot in a fetus with intrauterine growth restriction (IUGR) and placenta accreta. The pregnant woman came initially to the Fetal Medicine at March 2012 presenting the history of a fetus with IUGR. She was a 24-year-old healthy woman in her first pregnancy. The patient had only used aspirin between 25 weeks of gestation and 30 weeks of gestation due to placental insufficiency. She denied the use of tobacco, alcohol, or illicit drugs. Her serology for congenital infections was considered normal, and rheumatologic tests showed no changes. The initial ultrasound evaluation at 25 weeks of pregnancy showed fetal growth below the 5th percentile, increased resistance index and the presence of a bilateral diastolic notch in the uterine arteries, the umbilical artery with a slight increase in resistance, and the middle cerebral artery within the normal range. Evaluation performed 1-week later disclosed a reversal flow in the umbilical artery (reversed diastole). The true umbilical cord knot was identified at 29 weeks of pregnancy and documented by color Doppler (Figure 1A). Cardiotocography demonstrated a baseline fetal heart rate of 150 beats/min, with good variability, some transient accelerations, and absence of decelerations. The child was born by cesarean section at 30 weeks due to signs of fetal centralization and weighed 670 g, with Apgar

scores of 9 at the 1st and 5th minutes. Accretion of the placenta was suspected at the moment of delivery. The evaluation of the umbilical cord disclosed the presence of the true knot (Figure 1B). These findings were later confirmed by pathologic evaluation of the placenta and umbilical cord. Manual placenta removal and curettage were performed due to placenta accreta. Hysterectomy was not required. The child karyotype was normal (46, XX).

True umbilical cord knot has been described in 0.3–2.1% of all births [1]. Its prenatal diagnosis is considered extremely difficult and is rarely described in the literature [2,3]; however, the use of sonographic techniques complementary to the two-dimensional ultrasound, such as Doppler, can aid in the detection of true umbilical cord knots, because it enables the visualization of the flow of the umbilical cord. An umbilical cord with appearance of a “four leaf clover” or a “loop”, as observed in our case, is highly indicative of the diagnosis [2,3]. The majority of true umbilical cord knots did not present associated features or symptoms; however, it can represent a serious complication for the fetus, given the possibility of circulatory alteration (low perfusion) and subsequent IUGR or even death. True umbilical cord knot has also been associated with an increased incidence of premature birth and the need for neonatal intensive care [1]. In our case, we could not exclude the possibility that the IUGR presented by the fetus was related to the true umbilical cord knot. However, it is noteworthy that Okada et al [4] described a fetus with severe IUGR in a case of placenta accreta, an uncommon association also verified in our patient. Placenta accreta is characterized by a direct adherence of the placenta to the myometrium. It is also noteworthy in our case that the mother was healthy and primiparous, because placenta accreta usually occurs in mothers with a history of cesarean section or myomectomy accompanied by placenta previa [4]. We also cannot rule out the possibility that the IUGR verified in our fetus may be associated with an abnormal placental flow related to the placenta accreta, similar to that suggested by Okada et al [4].

* Corresponding author. Clinical Genetics—UFCSPA/CHSCPA, Rua Sarmento Leite, 245/403, CEP: 90050-170, Porto Alegre, RS, Brazil.

E-mail address: rfmrosa@gmail.com (R.F.M. Rosa).

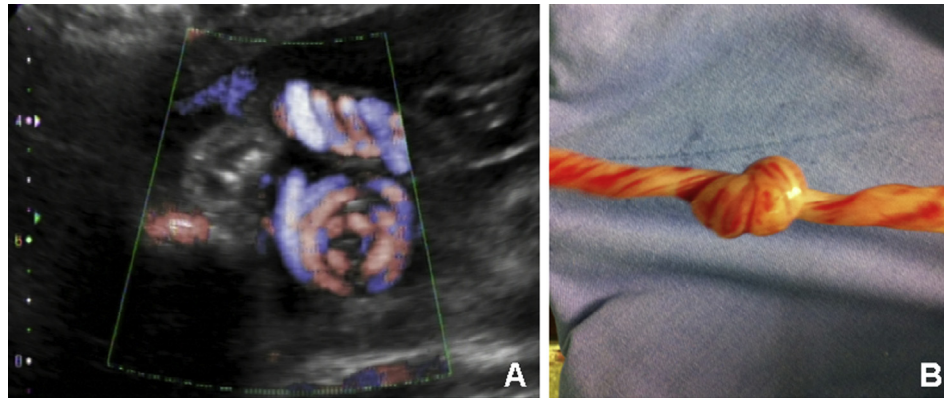


Figure 1. (A) Doppler ultrasound showing the appearance of the true umbilical cord knot, with evidence of the “loop” sign. Interestingly, in the same image, a portion of the normal umbilical cord above the true umbilical cord knot can be observed. (B) Visualization of the postnatal appearance of the umbilical cord, with evidence of the true knot.

Conflicts of interest

The authors have no conflicts of interest relevant to this article.

References

- [1] Räisänen S, Georgiadis L, Harju M, Keski-Nisula L, Heinonen S. True umbilical cord knot and obstetric outcome. *Int J Gynaecol Obstet* 2013;122:18–21.
- [2] Sepulveda W, Shennan AH, Bower S, Nicolaides P, Fisk NM. True knot of the umbilical cord: a difficult prenatal ultrasonographic diagnosis. *Ultrasound Obstet Gynecol* 1995;5:106–8.
- [3] Hasbun J, Alcalde JL, Sepulveda W. Three-dimensional power Doppler sonography in the prenatal diagnosis of a true knot of the umbilical cord: value and limitations. *J Ultrasound Med* 2007;26:1215–20.
- [4] Okada M, Mitsui T, Morita T, Nomura M, Ohta T, Itakura A. A case of placenta accreta complicated by severe IUGR and maternal coagulopathy. *Acta Obstet Gynecol Scand* 2007;86:760–2.