

True knot umbilical cord in childbirth vaginal: case report

Nó verdadeiro de cordão umbilical em parto vaginal: relato de caso

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ABSTRACT

Intertwined umbilical cord is a rare condition, but is related to high morbidity and fetal mortality. There is little evidence in the literature that deal with the subject. In this article, we describe a true knot umbilical cord case and aspects of vaginal delivery through a brief literature review.

Keywords: Obstetrics; Umbilical Cord; Infant, Newborn

RESUMO

O entrelaçamento de cordão umbilical é uma condição rara, porém está relacionado a elevada morbidade e mortalidade fetal. Há poucas evidências na literatura que versam sobre o tema. Neste artigo, descrevemos um caso de nó de cordão umbilical e os aspectos relacionados em parto vaginal por meio de uma breve revisão de literatura.

Palavras-chave: Obstetria; Cordão Umbilical; Recém-Nascido

INTRODUCTION

The true umbilical cord knot is relatively rare and its prevalence varies from 0.3% to 2.1%¹. It can be defined as the entanglement of a segment of the umbilical cord as a result of fetal movements, and in most cases occurs without any clinical significance, which makes intra-uterine diagnosis difficult^{2,3}.

It is believed that the cord knot is formed between the 9th and 12th weeks of gestation, since during this period there is a greater volume of amniotic fluid and a greater fetal circulation³. Some authors suggest that the true cord knot is formed intrapartum, which would not contribute to an investigation during the prenatal period to diagnose this fact^{2,4}. On the other hand, there are factors that increase the predisposition to this event⁵.

The pre-birth fetal mortality rate increases 4 to 10 times in such fetuses when compared to the normal obstetric population, which makes extremely important the prenatal diagnosis of the cord knot^{3,6}.

Considering the low prevalence and possible complications resulting from this clinical finding, this study aimed to report the case of a true umbilical cord knot.

CASE REPORT

A 19-year-old primigravid at 39 weeks' gestation, admitted to a philanthropic maternity hospital. The patient performed the 10 prenatal regular consultations which evolved with no interurrences and with normal complementary exams. The patient underwent four ultrasound examinations without the identification of presence of umbilical cord entanglement. At admission, the patient presented cervical dilation of 5 cm, 90% uterine cervix erection, intact pocket, fetus at -3 De Lee's plan, 144 fetal heart beats, uterine dynamic of 3/30"/10'. Labor was followed through a partograph where all parameters were evaluated, and there was no evidence of fetal distress or asphyxia on exams. At the end of 4 hours it has evolved to vaginal delivery without interurrences with medio-lateral episiotomy and identification by direct visualization of long umbilical cord and true knot in the median third without compromising the flow in the cord.

Male newborn, alive, assisted by the pediatrician in the delivery room, active and reactive, with presence of preserved tonus, clear amniotic fluid without lumps, adequate respiratory rate, 3,045 kg, apgar 9/10, referred for routine procedures and general care. On the first day of puerperium, physical and clinical examinations of both patients were performed without alterations. Newborn in exclusive, active and reactive breastfeeding, preserved tonus, vital signs evaluated and regular as expected for age, existing reflexes, preserved excretory physiological functions, evaluation of screening tests following the current guidelines of the Unified Health System (SUS).

The conduct was hospital discharge after routine procedures

and guidelines. The study volunteers signed a free and written informed consent form, authorizing the use of the previously presented data. In addition, it was previously submitted and approved by the institutional Research Ethics Committee according to Resolution 466/12 of the National Health Council and in accordance with the Helsinki Resolution.

DISCUSSION

The true cord knot is a rare change with few studies in the literature, the research was performed with the term "true knot umbilical cord" OR "umbilical cord true knot", and we found 57 articles approaching the topic in Medline, which justifies the interest in this case.

There are factors that increase its predisposition, which include male fetus, long umbilical cord, prolonged pregnancy, polyhydramnios, amniocentesis, small-sized fetuses, monoamniotic twins, gestational diabetes mellitus, chronic hypertension, anemia, multiparity, previous abortions, advanced maternal age, obesity and prolonged pregnancy^{1,3,5}.

In this case, the risk factors described in the literature were found as follows; the presence of a long umbilical cord and a newborn male, who did not present clinical alterations^{5,7,8}. The studies indicate that, in most cases, the cord knots are loose in the intrauterine phase or are formed during delivery and, therefore, do not cause significant perinatal problems^{2,4}. The main concern, however, is the possibility of a tight knot during the fetal phase that can generate changes in the umbilical blood flow and promote, as a consequence, interruption of the circulation, which can lead to asphyxia and fetal death intrauterine, especially at the time of labor^{3,4}.

In the literature we find reports on the importance of the complementary method, obstetric ultrasonography (OBU), to diagnose the true cord knot, which made it possible to perform it during the prenatal period^{9,10}. However, there are still limitations in the antenatal diagnosis of this condition, including inadequate prenatal care, either due to the lack of trained professionals to interpret the data suggestive of the condition or the absence of a 2-D, 3-D and Doppler colorful methods; impossibility of visualizing any umbilical cord within the uterus; and the absence of a distinctive sonographic aspect of a true cord knot^{2,11,12,13}. However, some data obtained through OBU may suggest the possibility of umbilical cord entanglement, such as polyhydramnios and long umbilical cord^{2,4}, since the latter was observed in the present case described herein. In view of the above, we suggest the improvement of ultrasound techniques by professionals who deal with care of pregnant women and training to better visualize the signs suggestive of this condition.

Due to the high risk of complications and rarity of this condition, there is little evidence in the literature about obstetric behavior at

delivery, and the choice of c-section can be considered if the diagnosis of a true cord knot is performed, and vaginal delivery should not be encouraged because of the possible risks to the maternal-fetal binomial². However, this indication is still very controversial in the literature and we can find obstetricians who face this condition differently². In the present case the decision for vaginal delivery was due to the favorable conditions and due to the lack of knowledge of the occurrence of the cord knot.

The entanglement of the umbilical cord as a result of fetal movements can occur without clinical alterations, which makes intra-uterus diagnosis difficult⁴. The importance of the case is due to the severity of the complications generated, even though rare, leading the newborn to death^{14,15,16}. In the case reported, the newborn was in good general condition, adequate vital signs and no changes until the moment of hospital discharge.

CONCLUSION

The true cord knot is characterized by the presence of a loop in a portion of the umbilical cord extension that, for the most part, occurs without any clinical significance, as in the case presented in this report, but can generate serious complications such as decreased umbilical blood flow, asphyxia and even intrauterine fetal death. However, it should be emphasized that in most cases the knot is unknown until the moment of delivery, which may contribute greatly to intrauterine complications.

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