



TRUE KNOT OF UMBILICAL CORD- A HIDDEN HAZARD

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ABSTRACT The umbilical cord is the lifeline of the baby. It helps in performing various functions in utero. Abnormalities of the umbilical cord can compromise the fetus and pose a threat in utero. A true knot of the umbilical cord is one such entity, which is rare and challenging to diagnose in the antenatal period. It can be an incidental finding but sometimes a tight true knot is reported to be associated with a fourfold increased risk of fetal death. Prenatal fetal ultrasound and doppler studies may be helpful in the identification of the true knot.

KEYWORDS :**INTRODUCTION-**

The umbilical cord attaches to the placenta, which helps in the transfer of blood, oxygen, and nutrition from mother to fetus. In the womb, the fetus cannot breathe through the lungs, so the umbilical cord helps in the transfer of deoxygenated blood from the fetus to the placenta. Any abnormality in the umbilical cord compromises the fetus, a true knot is one of them. The occurrence of a true knot is very rare. It can be described as the entwining of a section of the umbilical cord, typically without blocking fetal circulation, and frequently caused by the fetus slipping through a cord loop. (1) The reported incidence of true knots of the umbilical cord ranges from 0.3% to 2%. (1) there are certain factors that predispose to the formation of a true knot such as polyhydramnios, growth-restricted fetus, multiparity, diabetes, long cord, and male fetus. (2-5) The presence of a true knot can affect the delivery in many ways, it can evolve the normal delivery in an emergency cesarean section. In this article, we will discuss the different presentations of a true knot of the umbilical cord.

CASE REPORT-

A 26-year-old, G3P0020 at 38 +6 week period of gestation with gestational diabetes, was admitted for safe confinement, her blood sugar was within normal limits, and admission vitals and fetal heart rate were stable. The cervical ripening was done with cerviprime gel and later induced with oxytocin. Fetomaternal monitoring was done, and after 12hrs of monitoring, in the second stage of labour fetal heart rate showed acute fetal bradycardia, following which low mid-cavity forceps were applied. Delivered a live, male, 3.1 kg baby with Apgar of 7 and 9. On examination there was one true knot present in the umbilical cord, the placenta was grossly normal, and no retroplacental clot was present.

In another case, a 30-year-old G3P2002 at 33 weeks period of gestation was referred to our center in view of pre-term labour with prematurity. When the patient reached the triage area she was in advanced labour, vitals were normal. At admission on auscultation, fetal heart sound was not heard and on per vaginam examination patient was fully effaced, and fully dilated, patient was shifted to the delivery table. The patient delivered a fresh stillborn of 1.8 kg. On examination, two true knots were present in the umbilical cord. On delivery of the placenta, no retroplacental clot was present.

**DISCUSSION-**

The umbilical cord is the connection between mother and fetus responsible for the nourishment of the fetus and helps in removing fetal waste. The umbilical cord contains two arteries and one vein surrounded by a gelatinous stroma called Wharton jelly and covered by a single layer of amnion. It is about 50 -60 cm long. A cord more than 100 cm is considered abnormally long. Umbilical cord abnormalities can cause various complications in the mother and fetus. So timely diagnosis is essential. Cord prolapse is the most common abnormality of the umbilical cord, which can lead to a stillbirth if not timely intervened. Long cords are more likely to cause cord entanglements, emergency deliveries, fatal placental vasculopathy, intrauterine fetal death, and neurological disorders, whereas short cords are more likely to cause fetal malformations, fetal distress, and placental abruption. (6) True knots occur in <1 percent of births and are generally single and loose.

Loose knots are unlikely to be clinically significant. Tight or multiple true knots and knots associated with coiling or twisting of the cord increase the risk of fetal demise, particularly if the cord is long and during the second trimester when the fetus has a lot of room to move. The likelihood of stillbirth was more than fourfold higher in pregnancies with a true cord knot. (7) The root cause for the formation of a true knot is yet to be known but several factors predispose to the formation of a true knot such as polyhydramnios, long umbilical cord, small fetus, multiparity, male fetus and diabetes mellitus. So antenatal diagnosis possesses a great challenge.

A true knot might not present any symptom before any complications, so the utmost vigilance is much needed in high-risk patients. Prenatal diagnosis of a true knot is rare and challenging. The ultrasonographic appearance has been described as similar to a four-leaf clover, but this pattern is nonspecific and can be seen with false knots or closely apposed loops of the umbilical cord. (8) The "hanging noose," a cross-sectional image of the cord closely encircled by a loop of the cord, is another distinctive sonographic indication of the true knot. As the diagnosis is difficult, the Use of colour Doppler ultrasound, particularly three-dimensional power Doppler imaging, may support

the suspected diagnosis.

The management includes the serial ultrasound examination including Doppler studies and biophysical profile scoring and assessment of fetal growth and amniotic fluid volume. The serial nonstress tests and the fetal movement counts can be helpful. During labour, close monitoring of CTG can be done and urgent delivery will be performed in the presence of abnormalities in the fetal heart rate.

CONCLUSION-

A true knot is a rare abnormality of the umbilical cord. The incidence, risk factors, and outcomes reported all have been reported. As the prenatal diagnosis is difficult, the clinical management of true knot is yet to be determined. so, serial ultrasound examination and close fetal monitoring during labour until the delivery to be done.

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