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Momna Khan

Aga Khan University, momna.khan@aku.edu

Sana Zahiruddin

Aga Khan University, sana.zahiruddin@aku.edu

Maria Iftikhar

Aga Khan University

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True knot of umbilical cord: Case report and review of literature

Momna Khan, Sana Zahiruddin, Maria Iftikhar

Abstract

True knot of umbilical cord (TKUC) is a rare abnormality. When it becomes tight, it may lead to the obstruction of the foetal circulation and intrauterine death (IUD). We present two cases of TKUC managed at The Aga Khan University Hospital with two extreme outcomes. A 22 years old primigravida was diagnosed with unexplained intrauterine foetal demise at 28th week gestation. She delivered vaginally after induction and tight TKUC was identified as a cause of IUD. The second patient delivered an alive healthy male baby vaginally who was found to have a loose TKUC.

Keywords: Umbilical cord, True knot, Intrauterine death.

Introduction

The incidence of TKUC is around 0.3-2% of all deliveries.¹ Predisposing factors include long cord, polyhydramnios, small foetus, mono-amniotic twins, male foetuses, gestational diabetes mellitus, genetic amniocentesis and multiparity. Most knots are loose with no clinical significance, though there exists an association between cord knots and intrauterine death.² True knot of umbilical cord is associated with four fold increase risk of intrauterine foetal death.³ A case of "hanging injury" from a tightened true knot of the umbilical cord which resulted in intrauterine foetal demise has been reported from Virginia.⁴ Similarly Sharma et al presented a case of a 20 years old primigravida who delivered a baby with true knot of umbilical cord.⁵ Author is presenting two cases of TKUC not diagnosed on antenatal ultrasound.

Case-1

A 22 years old primigravida came in the emergency room with 28 weeks pregnancy and absent foetal movements for one day. She had no comorbidities and an uneventful pregnancy. Ultrasound showed (IUD) of 28 weeks gestation with adequate amount of liquor and no gross structural abnormality. All her laboratory investigations were within normal range. She delivered vaginally a dead male foetus of 1.5 kg with a tight TKUC (Figure-1). Cord



Figure-1: 28 weeks IUD with true knot of umbilical cord.

was gangrenous 40 cm long and placenta was normal. She did not come for a follow up after discharge.

Case-2

A 24 years old 2nd gravida was admitted at 38 weeks pregnancy with labour pains. Her last baby was delivered by caesarean section 18 months earlier. She had regular antenatal checkups and the antenatal period was uneventful. Her antenatal blood workup and ultrasound were within normal limits. She delivered an alive and healthy male baby of 3.4 kg with Apgar score of 7 and 9 in one and five minutes. There was no excess liquor or meconium staining and blood loss was minimal. The placenta appeared normal. The cord, however, had one knot that was loose (Figure-2). The cord measured 68cm. This patient was followed two weeks after delivery and



Figure-2: Healthy alive baby with loose umbilical cord knot.

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Department of Obstetrics and Gynecology, Aga Khan Maternal and Child Care Centre, Hyderabad.

Correspondence: Momna Khan. Email: drmomnakhan@yahoo.com

the baby was found in good health.

Discussion

The umbilical cord is called the foetal life line.⁶ Various abnormalities are observed in the morphology and pathology of the umbilical cord but knowledge of them is rather poor.⁴ A TKUC may cause foetal hypoxaemia or even IUD.⁷ Umbilical cord true knots during the second trimester are a very rare cause of abortions⁷ though it is said that its presence during the third trimester and labour is not associated with increased perinatal morbidity and mortality.⁸

Some authors believe that 3D power sonography may be helpful in the diagnosis of the umbilical cord knots especially in the 3rd trimester.⁹ Ramon et al reported characteristics sonographic findings of this condition.¹⁰ Study done by Guzikowski et al to assess the role of 2D and 3D ultrasound for diagnosing true knot of the umbilical cord found it a useful modality.⁶

Conclusion

Although the incidence, predisposing factors and potential outcomes of true umbilical knots have all been reported, the prenatal diagnosis and clinical management of the condition have not yet been clearly determined. Three-dimensional and colour Doppler examination is very important to diagnose a true umbilical cord knot. Perfection of true umbilical cord knot diagnosis and then

follow up sonographic imaging and close monitoring until the determination of foetal maturity, is the best way to achieve a good outcome.

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