

# A Rare Case Scenario of Sextuple Nuchal Cord Entanglement

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## ABSTRACT

**Background:** Nuchal cord which means the presence of one or more loops of umbilical cord wrapped 360° around the fetal neck, is a common finding at delivery. It is one of the dynamic factors which is attributed to some unusual consequences during pregnancy and intrapartum period and can lead to operative intervention. The presence of multiple nuchal cord loops (>4) is infrequently reported in the literature.

**Case report:** We report a rare case of sextuple (six loops) nuchal cord entanglement which was found during abdominal delivery in a woman who presented with labor pains and had persistent variable decelerations on cardiotocography.

**Conclusion:** We infer that in the present case, though the presence of six loops of the nuchal cord was not diagnosed on antenatal ultrasonography, good APGAR scores and successful outcome were attributed to timely intervention based on good intrapartum surveillance.

**Clinical significance:** Clinical management of nuchal cord entanglement remains an obstetric challenge. So far only two cases with multiple nuchal cord (more than five loops) were reported in the literature. We do report a rare picture of six loops of nuchal cord entanglement with good maternal and fetal outcome.

**Keywords:** Six loops of cord, Cord around the fetal neck, Cord entanglement, Nuchal cord, Obstetric complications, Suspicious cardiotocography. *Journal of South Asian Federation of Obstetrics and Gynaecology* (2021): 10.5005/jp-journals-10006-1906

## INTRODUCTION

The umbilical cord, a conduit between developing baby and placenta, is considered to hold both emotional and physical attachment between mother and fetus. It develops at 5 weeks after conception and holds nutritive, metabolic, and excretory functions. Nuchal cord accidents lead to 10% of stillbirths and 5–18% of fetal asphyxia cases.<sup>1</sup>

The presence of nuchal cord or cord around the fetal neck is a common finding at delivery, with a varied prevalence rates of 6–37%.<sup>1–3</sup> In an Indian study, the incidence of single, double, and three loops of nuchal cord were 5.32%, 1.14%, 0.17% respectively.<sup>3</sup> At the time of delivery, the cord can be compressed or stretched as the fetus descends down the birth canal. Although such events are rare, they can still happen, which can affect the perinatal outcome.

The presence of multiple nuchal cords ( $\geq 4$  loops) is infrequently reported. We report a very rare case of presence of six loops of nuchal cord entanglement which was found during abdominal delivery in a woman who presented with labor pains and had persistent variable decelerations on cardiotocography.

## CASE REPORT

A 28-year-old woman G2P1001 presented to our labor room (Department of Obstetrics and Gynaecology, Government General Hospital, Nizamabad, Telangana State) at 38 weeks 5 days period of gestation, with complaints of pain abdomen. Prior to presentation, she had leaking per vagina for 2 hours and no history of bleeding per vagina. Her perception of fetal movements was good. Her pregnancy was booked and supervised at a rural health center where she received tetanus toxoid, iron, and folic acid prophylaxis. Ultrasonography done at 36 weeks gestational age was normal and was corresponding to her period of gestation with adequate liquor. Her previous pregnancy was uneventful and a female baby was delivered 2 years back at a local

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hospital through cesarean section at term gestation in view of failed induction of labor. On clinical examination, her vital data was normal and on obstetric examination, gravid uterus was corresponding to term gestation with cephalic presentation. She had mild regular contractions with no scar tenderness. On per vaginal examination, cervix was soft, central, 1–2 cm dilated, draining clear liquor with vertex at –2. On cardiotocography, there were persistent variable decelerations. An emergency cesarean section was done after obtaining informed consent from the couple. Intraoperative findings revealed a well-formed lower uterine segment, clear liquor, and fetus in cephalic presentation with six loops of nuchal cord entanglement as shown in [Figure 1](#). The cord was immediately doubly clamped and cut, delivering a male baby (cried immediately after birth) by cephalic presentation, weighing 3100 g, with APGAR scores of 8 and 9 at 1 and 5 minutes, respectively. The baby was seen by a pediatrician immediately. The placenta had a normal morphology with no evidence of retroplacental clots and with a three-vessel umbilical cord. Both mother and baby had an uneventful postnatal period.

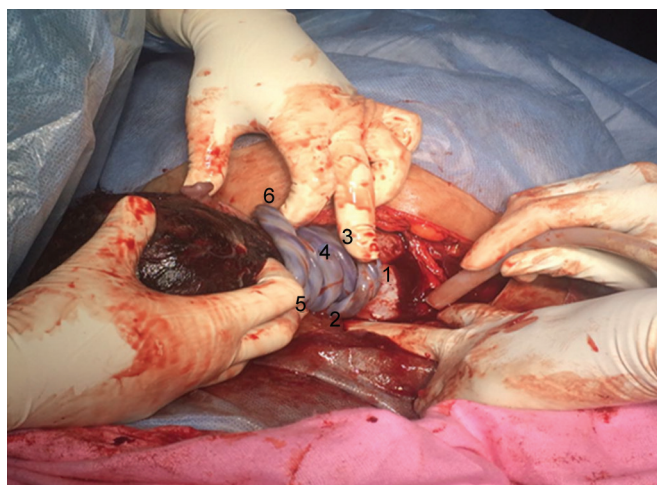


Fig. 1: Six loops of nuchal cord entanglement

## DISCUSSION

Crawford first defined the nuchal cord in 1962 as the presence of a cord all around the fetal neck. The nuchal cord can be classified as being loose or tight. In the former case, the encircled cord can be easily unlooped, delivery can be conducted in the usual manner and is not generally associated with adverse fetomaternal outcome. In latter cases, the encirclement is in such a way that it cannot be unlooped easily, clamping and dividing tight nuchal cord facilitates delivery. Nuchal cord can be single or multiple. Incidence of multiple nuchal cord  $\geq 4$  loops is very rare. In the literature, Mastrobattista<sup>4</sup> and Devendran et al.<sup>5</sup> have reported 9 loops, 6 loops of nuchal cord, respectively.

The nuchal cord can lead to perinatal fetal distress. Umbilical cord compression leads to obstruction of blood flow through the vessels, thereby increasing fetal arterial resistance and blood pressure with resultant bradycardia and decrease in cardiac output. If the cord compression is transient, fetal heart rate and metabolic status normalize with diffusion of carbon dioxide across the placenta thus maintaining oxygenation.

Risks associated with nuchal cord include decreased fetal movements, fetal heart rate abnormalities, meconium staining of liquor, nonprogression of labor, operative vaginal or abdominal deliveries, low APGAR scores, increased neonatal intensive care units admissions, need for resuscitation, stillbirth, poor neurodevelopmental performance during infancy and cerebral palsy. All these associated risks are variably linked to a number of loops of nuchal cord and whether it is loose or tight.<sup>1,6</sup> Despite its association with the above risks, majority of them can have a normal maternal and neonatal outcome. Cord compression during uterine contraction can result in variable decelerations, as evident in our case.

Nuchal cord per se is not an indication for cesarean section. Tight or multiple loops of the nuchal cord can adversely affect the obstetric outcome.<sup>1,6,7</sup> It was shown in a study on intrapartum complications associated with multiple nuchal cord entanglements that there was increased incidence of fetal heart rate changes in

the form of variable and late decelerations, meconium-stained liquor, higher incidence of operative delivery, lower birth weights in study group with four or more loops of nuchal cord.<sup>7</sup> In cases of intrauterine fetal death, it was the tightness of the cord which was implicated in the etiology.<sup>6,7</sup> Prenatal detection of such patients allows close monitoring during labor as the presence of tight and or multiple loops of the nuchal cord can alter management and may improve fetomaternal outcome in such cases.

Diagnosis of nuchal cord is not generally made until delivery and many times it remains an incidental finding on ultrasonography. Jouppila and Kirkinen have first described nuchal cord on ultrasonography in 1982.<sup>8</sup> In current practices, color Doppler imaging, and three-dimensional ultrasonography have been in use for sonographic diagnosis. Sensitive and specific diagnostic aids and expertise are required for identifying tight and multiple nuchal cord loops during the antenatal period, and their outreach in suburban and rural areas is limited at present. Despite efficient clinical supervision, adverse fetal events can happen, though rare, if intervened on time.

## CONCLUSION

Clinical management of nuchal cord entanglement remains an obstetric challenge. The fetomaternal outcome in such cases depends on various factors like a number of cord loops, type of coiling (loose or tight), gestational age, fetal growth, amniotic fluid index. We infer that in the present case, though the presence of six loops of the nuchal cord was not diagnosed on antenatal ultrasonography, good APGAR scores and successful outcome were attributed to timely intervention based on good intrapartum surveillance. With judicious intrapartum monitoring and timely intervention, perinatal outcome can be improved and obstetric catastrophe can be averted, even if undiagnosed prenatally.

## REFERENCES

1. Joshi K, Saxena R, Bhat M, et al. Incidence of cord around the neck and its effect on labour and neonatal outcome. *Adv Hum Biol* 2017;7:15–18. DOI: 10.4103/2321-8568.199535.
2. Hansen HS, Hillersborg B. Antepartum looping of the umbilical cord. *Acta Obstet Gynecol Scand* 1988;67:475–476. DOI: 10.3109/00016348809004265.
3. Sangwan V, Sangwan M, Siwach S, et al. Ultrasonographic detection of nuchal cord: required or not. *Int J Reprod Contracept Obstet Gynecol* 2014;3:507–511. Available at: <https://www.ijrcog.org/index.php/ijrcog/article/view/982>
4. Mastrobattista JM, Hollier LM, Yeomons ER, et al. Effects of nuchal cord on birth weight and immediate neonatal outcome. *Am J Perinatol* 2005;22(2):83–85. DOI: 10.1055/s-2005-837737.
5. Devendran D, Rabindran D, Dhwaraga J. A rare case of six loops of nuchal cord. *Obs Gynecol Rev* 2015;1(2), 30-33. DOI: 10.17511/joog.2015.i02.01.
6. Henry E, Andres RL, Christensen RD. Neonatal outcomes following a tight nuchal cord. *J Perinatol* 2013;33:231. DOI: 10.1038/jp.2012.79.
7. Larson JD, Rayburn WF, Crosby S, et al. Multiple nuchal entanglements and intrapartum complications. *Am J Obstet Gynecol* 1995;173(4):1228–1231. DOI: 10.1016/0002-9378(95)91359-9.
8. Jouppila P, Kirkinen P. Ultrasonic diagnosis of nuchal encirclement by the umbilical cord: a case and methodological report. *J Clin Ultrasound* 1982;10:59–62. DOI: 10.1002/jcu.1870100205.