

Monoamniotic Twin Pregnancy; is There a Need for Frequent Fetal-Doppler Surveillance?

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ABSTRACT:

Monoamniotic twin pregnancy is a rare type of twin pregnancy which poses risk of cord entanglement and sudden death of either one or both fetuses. The role of antenatal surveillance by Ultrasound Doppler for umbilical cord and ultrasonic evidence of cord entanglement or knotting may predict the pregnancy outcome but yet unavoidable. The discussion will include antenatal surveillance in this rare type of pregnancy.

KEYWORDS: Monoamniotic pregnancy, ultrasound Doppler, cord entanglement

INTRODUCTION

Monozygotic twinning is rare. It occurs in approximately 3-4 per 1000 live births. Of these, the vast majority are monochorionic, which puts these twins at a higher risk of perinatal mortality than dichorionic twins. Of the monochorionic twins, those that are monoamniotic are at the greatest risk of mortality and morbidity.

Monoamniotic twinning is even rarer, occurring in 1:1650 to 1:91000 live births. This type of twin is strongly associated with prematurity as delivery prior to 32 weeks is common in monoamniotic twins and adverse neonatal outcomes strongly correlate with birth weight and/or gestational age at delivery. Monoamniotic twins are at most increased risk of perinatal complications with perinatal mortality of 28-60%.¹

Cord entanglement affects the majority of monoamniotic (MA) twins, accounting for the high proportion of intrauterine death of MA twins and it is often present from early gestation.² This umbilical cord entanglement and (or) knotting may lead to intrauterine death of both (more often) or one twin. Another study found that colour flow Doppler is useful in the identification of umbilical cord entanglement in monoamniotic pregnancy and may provide a method of monitoring the fetuses for evidence of cord compression.³

CASE 1

A 34 year old doctor in her third pregnancy was diagnosed to have monochorionic monoamniotic preg-

nancy at 10 weeks gestation after several episodes of bleeding in early pregnancy. Both partners have family history of multiple pregnancies.

Ultrasound screening for nuchal translucency were negative for both fetuses. Detailed ultrasound performed during second trimester revealed structurally normal fetuses. She was subsequently followed up monthly by serial ultrasound for growth parameters until 26 weeks period of amenorrhea. Both fetuses were growing proportionately along 50th centile of the growth chart and with adequate liquor volume.

At 26th week, two doses of intramuscular Dexamethasone was given to promote lung maturity. Fetal surveillance was done by monitoring growth parameter and amniotic fluid index (AFI). Doppler ultrasound was serially done fortnightly for evidence of cord entanglement. The doctor was counseled regarding the risk of cord entanglement and subsequent risk of intrauterine death of both twins despite the monitoring.

No evidence of cord entanglement was noted despite the fetuses lying in close proximity with each other. The pulsatility index (PI) and resistance index (RI) for both fetuses were within normal range. The follow up was uneventful until 34 weeks when the growth velocity started plateauing and crossing the centile ranges.

The patient and her husband (both medical doctors) were counseled regarding the risk of continuing the pregnancy hence they were advised on delivering the babies as soon as possible. Caesarean section was planned after discussion with neonatal team and another two doses of Dexamethasone were given for promotion of lung maturity.

Elective caesarian section was performed and two twin girls weighing 1900 gm and 1950 gm were safely delivered. The first twin was intubated but self extubated after 12 hours and the second twin was put on

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Continuous Positive Airway Pressure (CPAP). Both twins were administered intralaryngeal surfactant. The placenta was examined and confirmed to be mono-chorionic monoamniotic with the distance between the two umbilical cord insertions of only 1 cm apart (Figure 1).

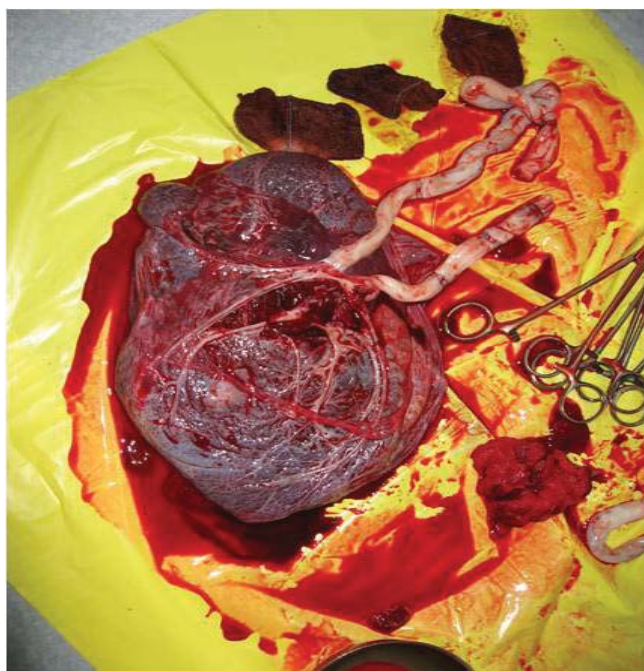


Figure 1. Placenta showing the umbilical cords in close proximity to each other i.e. 1 cm apart.

DISCUSSION

Monochorionic monoamniotic pregnancy is at most increased risk of perinatal complications with perinatal mortality of 28-60% reported in literature.¹ The most specific known complication of monoamniotic complication is umbilical cord entanglement and/or knotting of the cords leading to intrauterine death of one or both twins.

Establishing the chorionicity and amnionicity in twin pregnancy is an essential part of ultrasound examination. The diagnosis of cord entanglement in monoamniotic twin pregnancy enables a forecasting of possible complications. Documenting the gestational age at detection, the location of placenta and the adhered umbilical cords and the Doppler flow pattern are crucial to facilitate the assessment of short and long term development.

Improvement in perinatal imaging system and advancement of technology in ultrasound like 3D enables acquisition of volume data comprising information on umbilical color Doppler hence providing graphic depiction of cord entanglement. The rationale for fetal surveillance in monochorionic monoamniotic twin pregnancies is timely intervention to prevent the increased fetal/perinatal morbidity and mortality secondary to cord accidents like entanglements.

However, due to possible complications, counseling and management of monoamniotic twins should be performed in tertiary centre. The assessment of chorionicity and amnionicity is much more difficult to be made in later state of pregnancy, thus emphasizing the importance of achieving a correct diagnosis in the first trimester.

It was shown that the diagnosis of cord entanglement is feasible early in gestation and future protocols are proposed to document the gestational age at detection, the location and the Doppler flow patterns and to facilitate the assessment of short and long term development.⁴

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