A MONOCHORIONIC DIAMNIOTIC TWIN PREGNANCY COMPLICATED BY UMBILICAL CORD ENTANGLEMENT AFTER A SPONTANEOUS SEPTOSTOMY: A CASE REPORT

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ABSTRACT

BACKGROUND: Umbilical cord entanglement is typically associated with monochorionic monoamniotic twin pregnancies and is very rare in monochorionic diamniotic (MCDA) twins unless a spontaneous septostomy occurs. We reported an unsual case of twin still births because cord entanglement in a pregnancy previously confirmed as MCDA, with septostomy identified only after delivery

CASE PRESENTATION: A 31 year old, Gravida 3 Para 2, Ethiopian woman with twin pregnancy was followed at Abebech Gobena Maternal and Child Health Hospital, Ethiopia. A detailed fetal scan at 26 weeks and 5 days confirmed a MCDA twin pregnancy with normal findings for both fetuses. She subsequently received biweekly antenatal evaluations to monitor growth, amniotic fluid, and uterine artery Doppler, that were unremarkable until 36 weeks of gestational age. Elective delivery was planned at 37 weeks. At 36 weeks and 6 days, she presented with two hours of pushing down pain and reported decreased fetal movement for three days. Ultrasound revealed intrauterine fetal demise of both twins. She delivered vaginally, and postpartum examination demonstrated umbilical cord entanglement and disruption of the intertwin membrane, consistent with spontaneous septostomy.

CONCLUSION: This rare case emphasizes the importance of maintaining clinical suspicion for spontaneous septostomy in MCDA pregnancies, as the resulting functionally monoamniotic environment can lead to catastrophic complications such as cord entanglement. Continued surveillance and heightened awareness are essential to facilitate timely intervention and reduce fetal morbidity and mortality in these high risk scenarios.

KEYWORDS: Spontaneous septostomy, Ethiopia, cord entanglement, IUFD, Fetal target scan.

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INTRODUCTION

Monoamniotic twins are at an increased risk of umbilical cord entanglement, a condition linked to higher rates of perinatal morbidity and mortality. Umbilical cord entanglement is strongly associated with negative perinatal outcomes[1,2]. Early identification of cord entanglement in monoamniotic and suspected pseudomonoamniotic twin pregnancies through sonography, along with individualized treatment, results in a notable enhancement in perinatal outcomes[3–6].

Pseudo monoamniotic twins are an intrauterine rupture of the membranes that normally divide the amniotic cavities in a diamniotic twin pregnancy, causing the pregnancy to behave as if it were monoamniotic. This condition leads to perinatal complications that are similar to those seen in genuine monoamniotic pregnancies[3,7–9].

Herein we present a case of a monochorionic diamniotic (MCDA) twin pregnancy complicated by spontaneous septostomy leading to cord entanglement of both twins. Regrettably, the cord entanglement was only detected after delivery, resulting in the loss of both twins. Although some literature has described this as a rare occurrence, to the best of the authors' knowledge, no such cases have been documented in Sub-Saharan countries like Ethiopia.

Case Presentation

A 31 year old Gravida 3 Para 2, (both alive), was referred from a local health center to Abebech Gobena Maternal and Child Health Hospital at 26weeks 5days of gestation (dated from a 15wks US scan) with a diagnosis of twin pregnancy. She had her follow up care at the Maternal Fetal Medicine unit of the Obstetrics and Gynecology of the hospital until delivery.

A fetal target scan was performed confirming a monochorionic diamniotic twin pregnancy with a clearly visible dividing membrane (Figure 1), and both fetuses had no structural anomalies. There were no sonographic evidences for Twin to Twin Transfusion or Twin Anemia Polycythemia Sequence.

She has been attending antenatal care follow ups every two weeks to monitor fetal growth, amniotic fluid, uterine artery Doppler's, and other aspects of antepartum surveillance with no abnormal findings until 36 weeks of gestation. During this time, she was supplemented with one tablet of ferrous sulfate ($FeSO_4$) daily and received two doses of the Td vaccine. All baseline investigations were normal, and there was no history of invasive intrauterine procedures like amniocentesis, infection, maternal abdominal trauma, or any chronic medical conditions such as hypertension, diabetes, or heart disease.

At her last antenatal visit at 36 weeks of gestation, the dividing membrane was visible, and both fetuses were in a cephalic presentation with estimated fetal weights of 2.1 kg and 2.3 kg, respectively. The single deepest pocket was 4 cm and 3.5 cm for each fetus, normal umbilical and middle cerebral artery Doppler. Both had reassuring biophysical profile. She was scheduled for elective delivery at 37 weeks. However, at 36 weeks and 6 days, she presented with complaints of pushing down pain of 2hours and decreased fetal movement for 3 days. On ultrasound, both fetal heartbeats were absent. Labor progressed and she delivered vaginally.

The birth outcome was Twin A, weighing 2 kg, and Twin B, weighing 2.4 kg, both male stillborn with grade II maceration. The placenta was delivered by controlled cord traction. The placenta showed one chorion, two amnion, and two cords, each with a cord length of approximately 48 cm. A true knot involving both umbilical cords was identified, with the cords of the two twins found entangled with each other (Figure 4). No retro-placental clot was noted, and the placenta weighed 500 grams. Her postnatal course was smooth. The cause of intrauterine fetal death (IUFD) was umbilical cord entanglement, which occurred after spontaneous septostomy and was identified during the postpartum period.

Figure 1. Sonographic image showing the thin dividing membrane (0.17cm) that separates the two amniotic cavities in a monochorionic diamniotic twin pregnancy at 26 weeks and 5 days.

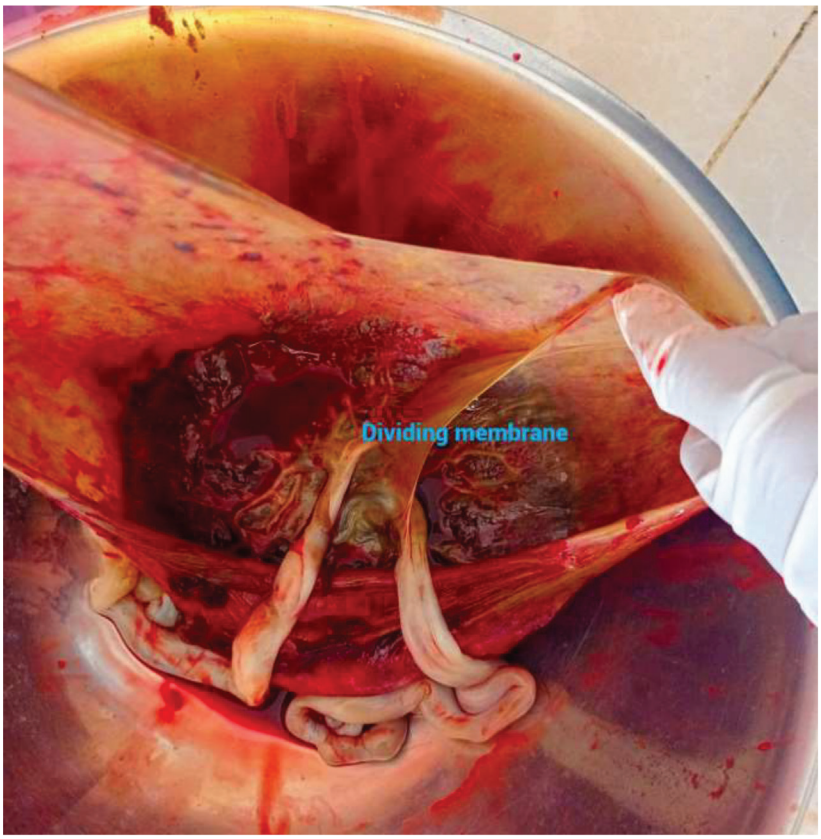

Figure 2. An image showing a monochorionic diamniotic twin placenta with a thin amniotic fetal membrane (shown as the dividing membrane) intersecting the two centrally inserted and closely positioned umbilical cords.

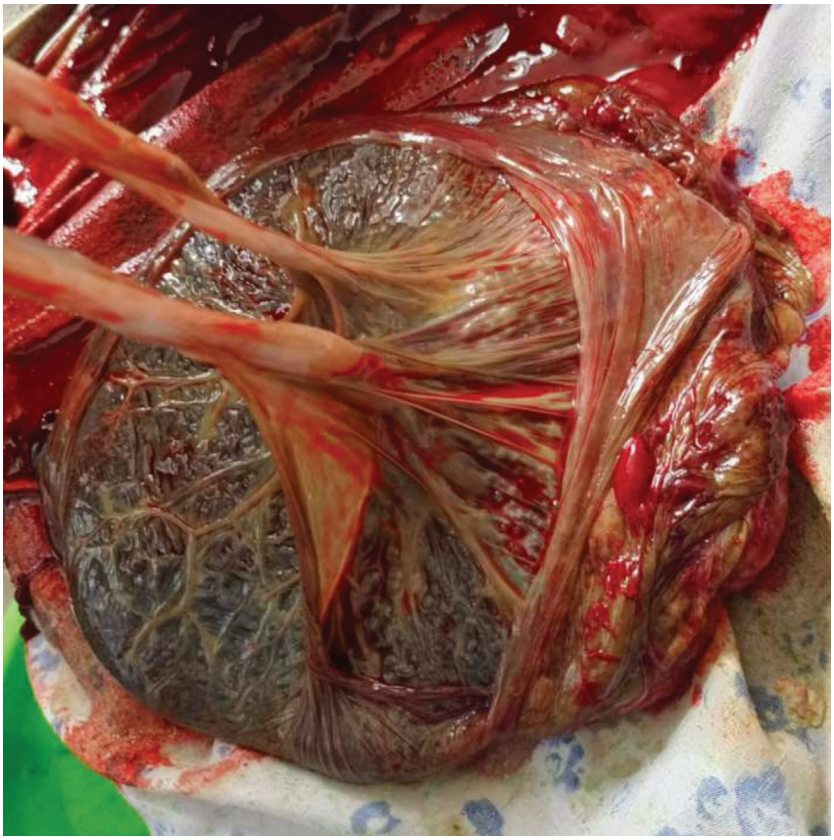

Figure 3. An image of a monochorionic diamniotic twin placenta, featuring two centrally inserted and closely positioned umbilical cords.

Figure 4. An image showing a monochorionic diamniotic twin placenta with entangled umbilical cords. Grade 1 meconium stained amniotic fluid is visible on the umbilical cords and the examiner's gloves, indicating fetal compromise.

DISCUSSION

The management of a twin pregnancy during the antenatal period is partially guided by the ultrasound characteristics of the dividing membrane. Monoamniotic twinning accounts for about 5% of monochorionic twin pregnancies [4,6,10–12].

Systematic prenatal assessments utilizing ultrasound and color Doppler indicate that nearly all monoamniotic twins experience cord entanglement and verify that these twins share a single amniotic sac. Umbilical cord entanglement is the primary cause of fetal death in pregnancies involving monoamniotic twins and a pseudomonoamniotic setting. Consequently, the identification of umbilical cord entanglement can influence the management of the pregnancy[1,2,13].

Recent improvements in perinatal outcomes in monoamniotic twin are credited to early antenatal detection of umbilical cord entanglement, administration of corticosteroids, enhanced fetal surveillance, timely elective delivery and appropriate pediatric care. These measures have resulted in a reduction in perinatal loss to nearly 10%, which is significantly lower than the previously quoted risk of 30-70% for MCMA twins.[4–6,11,14,15]

Even if the pregnancy is initially diagnosed as diamniotic, membrane rupture can occur spontaneously, transforming the pregnancy into a functionally monoamniotic one, which significantly increases the risk of cord entanglement and fetal death.[7,10,16,17]

Spontaneous disruption of the dividing membrane in MCDA twins can result from several factors, including invasive intrauterine procedures such as amniocentesis, intrauterine infection, fetal trauma to the membrane, developmental abnormalities, or maternal abdominal trauma. This entity may indeed be more prevalent than previously thought; however, the exact incidence of spontaneous septostomy of the dividing membrane in monochorionic twins remain uncertain[7–9,18–22].

However, none of these factors were present in our case and the exact etiology for this intrauterine disruption is unknown. We observed that the proximity of the cord insertion site, potentially coupled with fetal movement, might have caused rubbing that led to the rupture of the intertwin dividing membrane.

Conclusion

This rare case highlights the critical need to maintain clinical suspicion for spontaneous septostomy and the resulting potential for a functionally monoamniotic environment, which can lead to serious complications such as cord entanglement, even in pregnancies previously confirmed as monochorionic diamniotic by ultrasound. Heightened clinical vigilance is essential to guide timely intervention, especially when the pregnancy is near term, to reduce fetal morbidity and mortality in such high-risk scenarios.

DECLARATIONS

Ethics approval and consent to participate

Ethical approval for the publication of this case report was obtained from the Institutional Review Board of Yekatit 12 Hospital Medical College (Y12HMC). Data were collected after obtaining written informed consent from the mother. Data collection was confidential and no personal identifiers, such as name and phone number, were requested. All methods were performed in accordance with the relevant ethical standards and guidelines.

Consent for publication

All authors have read and approved the final version of the work and agree to its submission and publication.

Competing interests

The authors declare that they have no competing interests.

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