

Monochorionic Diamniotic Twin Pregnancy with En Caul Delivery of One Twin: A Rare Case Report

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ABSTRACT:

An en caul delivery is a very rare obstetric condition that offers protective benefits against fetal mechanical trauma during preterm or complicated births. This case presents an extremely rare occurrence of a term monochorionic diamniotic twin delivery via lower-segment cesarean section in a 21-year-old primigravida with gestational diabetes mellitus. The first twin was delivered following intentional artificial rupture of membranes, whereas the second twin was successfully extracted en caul within an intact amniotic sac. Both live female neonates showed favorable APGAR scores and required no neonatal intensive care unit admission. Both the mother and the neonates were discharged without any complications on the fourth postoperative day. This case emphasized that controlled en caul extraction of a co-twin may be safely performed at term, optimizing fetal outcomes without increasing any maternal morbidity.

Keywords: Cesarean section; En caul birth; Monochorionic diamniotic; Twin pregnancy

INTRODUCTION:

An en caul birth refers to the delivery of a fetus completely enclosed within an intact amniotic sac. It is a rare obstetric event, estimated to occur in fewer than one in 80,000 vaginal deliveries and commonly encountered during cesarean delivery of preterm infants.¹ The intact amniotic sac may protect the fetus from mechanical trauma, minimize pressure changes

during delivery and facilitate atraumatic extraction of preterm neonates.¹⁻⁴ Monochorionic Diamniotic (MCDA) twin pregnancies carry increased risks for both the mother and the neonates.⁵ Reporting the present case adds to the limited literature and expands awareness of such an uncommon technique that can help guide clinicians who encounter similar rare cases in the future.

CASE REPORT:

A 21-year-old primigravida from a remote area of Palpa District, Nepal, presented at 37 weeks of gestation with intermittent lower abdominal pain suggestive of the latent phase of labor. The pregnancy had been regularly followed with antenatal care and was complicated by Gestational Diabetes Mellitus (GDM), which was regularly monitored using blood glucose level testing and was adequately controlled with exercise and medical therapy.

On examination, the patient was hemodynamically stable. The uterus was consistent with a term twin pregnancy. Mild uterine contractions were present and the cervix was two cm dilated with minimal effacement. Fetal heart sounds of both twins were normal.

Ultrasonography showed a viable MCDA twin pregnancy with a single placenta and a thin intertwin membrane (T-sign), consistent with MCDA

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chorionicity. Both fetuses had appropriate growth for gestational age with adequate amniotic fluid. The first twin was in cephalic presentation, while the second twin was in breech presentation. Doppler studies were normal. There were no structural fetal anomalies or twin-to-twin transfusion syndrome.

Based on the clinical findings of an MCDA twin pregnancy in the latent phase of labor, associated with GDM, the decision was made to perform an emergency lower-segment cesarean section under spinal anesthesia. Following the uterine incision, the first twin was delivered at 9:33 AM after intentional rupture of the amniotic sac. The outcome was a live female neonate weighing 2330 grams with APGAR scores of 7/10 and 8/10 at one and five minutes, respectively.

Later, the second twin was identified within an intact amniotic sac. Gentle surgical manipulation allowed complete extraction of the fetus enclosed within the unruptured membranes (*en caul*) (**Fig. 1**). The amniotic sac was then opened outside the uterus, resulting in the delivery of a live neonate at 9:35 AM, weighing 2100 grams with APGAR scores of 7/10 and 8/10 at one and five minutes, respectively. The second twin was delivered *en caul* because the intact sac may reduce mechanical trauma during extraction, maintain a fluid-filled environment until delivery and also minimize cord compression during manipulation.

Examination of the placenta confirmed a single MCDA placenta with a fundoposterior attachment and discoid morphology. Estimated

intraoperative blood loss was approximately 800 mL without any intraoperative complications. The post-operative period was uneventful. Both neonates remained clinically stable without requiring Neonatal Intensive Care Unit (NICU) admission. The mother and both infants were discharged in favorable condition on the fourth postoperative day and were advised to follow up in the Obstetrics and Gynecology Department after two weeks.

DISCUSSION:

En caul birth is one of the rarest forms of delivery, which is usually encountered in obstetric practice and is estimated to occur in fewer than one in 80,000 vaginal deliveries, and is commonly encountered during cesarean delivery of preterm infants. Though preservation of the intact amniotic sac during cesarean section has become an accepted technique for selected preterm deliveries, reports involving twin pregnancies remain uncommon.^{1,6,7}

The presumed advantages of *en caul* delivery include protection of the fetus from mechanical trauma, maintenance of placental circulation until controlled rupture of the membranes, and reduction of stress during extraction. These advantages are, however, particularly important in premature neonates.^{6,8}

Twin pregnancies present classical surgical challenges because each fetus might require a different extraction technique depending on fetal position, placental position, membrane status as well as uterine anatomy. In this case, the first twin was delivered after the membranes were ruptured, whereas the second twin remained enclosed within an intact amniotic sac and was successfully delivered *en caul* without any maternal or neonatal complications.

Recent reports have described successful *en caul* cesarean delivery in singleton and twin pregnancies, mostly in preterm births. However, such cases remain extremely rare.⁹ In this case, the patient had a term MCDA twin pregnancy complicated by GDM. Despite these risk factors, favorable maternal and neonatal outcomes were achieved. Neonatal Intensive Care Unit admission for the neonate was not required and maternal recovery was uncomplicated.

MCDA twin pregnancies need close antenatal surveillance as they are associated with unique complications related to placental sharing, including selective fetal growth restriction, twin-to-twin transfusion syndrome as well as increased perinatal morbidity. Thus, management should be individualized according to fetal condition, gestational age and intraoperative findings rather than following a constant approach. In this present



Fig. 1. The second twin delivered within the unruptured membranes (*en caul*).

case, there was no evidence-based indication for en caul delivery, such as extreme prematurity or anticipated difficult fetal extraction. After delivery of the first twin, the second twin remained enclosed within an intact amniotic sac. As the membranes were preserved and extraction was technically feasible, the fetus was gently delivered en caul. Therefore, the en caul delivery was incidental rather than planned, which provides a unique chance to document such a rare operative moment in an MCDA twin pregnancy.¹⁰

This present case highlights that en caul extraction of the second twin can be safely achieved in selected cases when surgical conditions allow. Thus, documentation of such rare obstetric conditions expands recent knowledge as well as encourages further evaluation of potential neonatal benefits associated with preservation of the intact amniotic sac during cesarean delivery.

CONCLUSION:

Successful cesarean delivery with one twin delivered conventionally after rupture of the membranes and the other delivered completely en caul is extremely rare. Thus, careful surgical

technique facilitated favorable maternal as well as neonatal outcomes without any complications. Reporting a lot of similar cases will improve our understanding of such an uncommon obstetric phenomenon and also contribute to evidence-based guidance for optimal management.

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