

Unexpected Survival of a Monochorionic Co-twin Following Intracardiac Potassium Chloride: A Case

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ABSTRACT

We report a rare clinical scenario of an IVF-conceived quadruplet pregnancy, reduced to a triplet (singleton and a monochorionic diamniotic twin pair), in which intracardiac potassium chloride (KCl) was administered to one monochorionic twin at an outside centre with the expectation—based on existing literature—that it would also result in demise of the co-twin via placental vascular anastomoses. However, this outcome is not universal. In our case, the co-twin survived without adverse sequelae. Serial surveillance, including a targeted anomaly scan at 19 weeks and fetal MRI at 32 weeks, demonstrated normal growth, anatomy, and neurological integrity.

INTRODUCTION

A 36-year-old primigravida with IVF conception

at an outside center was initially diagnosed with a quadruplet gestation. One embryo underwent spontaneous vanishing, resulting in a triplet gestation consisting of a singleton fetus (Fetus A) and a monochorionic diamniotic (MCDA) twin pair.

Intracardiac potassium chloride (KCl) was administered to one fetus

in the MCDA pair with the intent—based on the

concept that shared placental vascular anastomoses would transmit the effect to the co-twin, resulting in demise of both twins [1]. Unexpectedly, the co-twin (Fetus B) survived.

Take Home Message

This case suggests that some monochorionic placentas may lack clinically significant vascular anastomoses, which can lead to unexpected Survival of the other co twin.

In such cases patient should be thoroughly counselled regarding all the possible fetal and maternal complications.

Intensive monitoring of fetal well-being with fetal growth scans and neurosonography and fetal MRI and routine maternal assessment with routine blood work and coagulation profile remains essential if the pregnancy is continued whenever such an unusual survival occurs.

CASE DETAILS

Targeted Anomaly Scan (19 Weeks, 1 Day)

A detailed survey performed on 21/11/2025 confirmed that both Fetus A (singleton) and Fetus B (surviving MCDA twin) showed consistent growth with a weight discordancy of only 4%.

Neurosonography

Revealed a normal midline falx, Cavum Septum Pellucidum (CSP), and thalami in both fetuses.

Lateral ventricles measured 6 mm for Fetus A and 6.1 mm for Fetus B, with no evidence of intracranial hemorrhage or porencephaly.

Fetal Echocardiography (22 Weeks, 6 Days)

Scanning performed on 17/12/2025 confirmed normal cardiac anatomy and function in both survivors. The heart revealed normal four-chamber views, intact interventricular septa, and normal origins of the great vessels.

Fetal MRI – Brain (32 Weeks)

A multi-planar, multi-echo plain fetal MRI was performed on 26/02/2026. There was no evidence of hematoma, diffusion restriction, gliosis, encephalomalacia, or porencephaly.

Sulcation and gyral patterns appeared normal for the gestational age.

Maternal Surveillance

Included regular monitoring of D-dimer and fibrin degradation products (FDP) to assess coagulation status

DISCUSSION

In monochorionic pregnancies, vascular anastomoses permit bidirectional blood flow between twins, creating significant hemodynamic interdependence [2,8]. Based on this physiological interconnection, it has been demonstrated that selective reduction of a monochorionic pair can be achieved by injecting potassium chloride into only one twin, resulting in the demise of both fetuses due to shared circulation [1].

This concept explains why intracardiac KCl was administered to only one twin in the present case. However, despite this expected outcome, co-twin survival can rarely occur, as seen in our case, likely due to minimal or functionally insignificant vascular anastomoses limiting inter-twin transfer.

The surviving co-twin remains at risk for several complications. Acute transfusion imbalance may lead to hypotension and hypoxic-ischemic injury, resulting in neurological sequelae such as multicystic encephalomalacia, porencephaly, intraventricular hemorrhage, and cortical necrosis, with potential long-term

neurodevelopmental impairment [3,5,6]. Additional risks include fetal growth restriction, preterm birth, and delayed intrauterine demise [3,6]. Despite these known risks, our case demonstrated favorable outcomes, with normal neurosonography and fetal magnetic resonance imaging findings, and no evidence of neurodevelopmental compromise.

Maternal complications, although uncommon, must also be considered. These include disseminated intravascular coagulation (DIC), infection, preterm labor, and psychological stress [4,7]. Monitoring of coagulation parameters such as D-dimer and fibrin degradation products (FDP) is recommended for early detection of coagulopathy [4,7].

Management strategies involve close maternal and fetal surveillance, prompt correction of coagulopathy if present, administration of corticosteroids for fetal lung maturity when preterm delivery is anticipated, and timely delivery based on clinical indications [2,4,7]. In our case, the mother remained clinically stable throughout pregnancy, with no evidence of coagulopathy or other complications.

CONCLUSION

This case highlights that although the co-twin

demise following intracardiac KCl injection in monochorionic pregnancies is commonly expected due to shared placental circulation, but

it does not invariably occur. Careful and intensive fetal and maternal surveillance is essential to optimise outcomes in such rare scenarios.

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