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CASE REPORT

# MALFORMATIONS AND INTRAUTERINE GROWTH RESTRICTION IN TWINNING: A CASE REPORT

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## ABSTRACT

*Twin pregnancies have higher fetal mortality and morbidity compared to singleton pregnancies, especially monochorionic pregnancies, as they are associated with a higher risk of malformations, fetal growth disorders and prematurity.*

*The objective of the present work is a case report on diamniotic monochorionic twins associated with a selective growth restriction due to a malformation of the digestive system. The definitive diagnosis of tracheoesophageal fistula is established with the direct visualization of the fistulous path through esophagoscopy and/or tracheoscopy, radiological visualization by imaging methods, surgeries and autopsies, demonstrating a diagnostic difficulty, since the ultrasound does not have specific signs, being discovered only during childbirth.*

*Therefore, the determination of chorionicity is fundamental for the adequate planning of prenatal and ultrasound follow-up, since it is directly related both to the increased risk of complications and to alterations exclusive to monochorionicity.*

*KEYWORDS: MALFORMATION; IUGR; TWINS; PREMATURITY; ULTRASOUND*

## INTRODUCTION

With continuous technological advances and improvements in the quality of healthcare, the diagnosis of multiple pregnancies has become more frequent, assuming a prominent role in the knowledge of human reproduction. This scenario is justified due to the challenges inherent to this type of pregnancy, which include a greater risk of prematurity, fetal deaths, growth restrictions, morphological changes, among other complexities.

The frequency of monozygotic pregnancies is presented as a constant rate of 4/1,000, with small variations in relation to other factors such as maternal age, and may correspond to 20-30% of all twin pregnancies. While dizygotic ones respond around 70-80%, all being dichorionic types[1]. Monozygotic pregnancies can result in monochorionic or dichorionic pregnancies, with a smaller proportion being dichorionic, with embryonic division occurring up to the fourth day. When division occurs after this period, it will always result in the formation of a single placenta, regardless of the number of amnions[1].

The differentiation between zygocity and chorionicity is extremely important in the evaluation of multiple pregnancies. Zygocity refers to the identification of the number of fertilized eggs that are present in a multiple pregnancy. There are two main categories of zygocity: monozygotic and dizygotic. Chorionicity refers to the number of chorionic membranes present in multiple pregnancies, and is relevant to assess the risk of obstetric complications. Chorionic membranes are structures that surround gestational sacs and contain developing babies. Chorionicity can be classified into two main types: monochorionic and dichorionic [1].

Ultrasonography plays a crucial role in determining chorionicity in multiple pregnancies. Using ultrasound, it is possible to visualize and analyze the number of gestational sacs, chorionic membranes and the position of babies in the uterus. This information is essential to properly monitor the pregnancy and provide an individualized obstetric care plan, ensuring the health and safety of both mother and babies throughout pregnancy [1-2].

Therefore, this work aims to report a case of a twin with congenital malformation associated with growth restriction, evaluating the long-term prognosis in twins affected or not by selective growth restriction and examining the clinical and fetal development results.

## CASE REPORT

Patient F.B.F.M.S, 33 years old, Caucasian, primigravida, at 12 weeks and 3 days of gestation in her first ultrasound (US) showed a monochorionic diamniotic twin pregnancy, with twin 1 having a crown-rump length (CRL) of 71.1mm and twin 2 measuring 63.0mm (Figure 1). Both twins had the same nuchal translucency (NT) measurement of 1.8mm. The pregnancy was classified as monochorionic and diamniotic due to the presence of the T-sign of the membranes on the chorionic plate (Figure 2).

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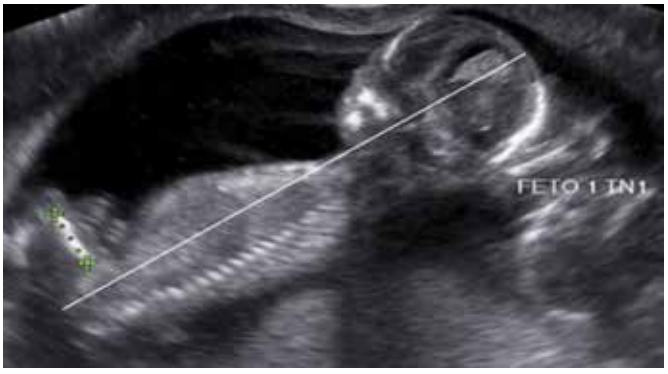


**Figure 1: Crown-Rump Length of Twin 1**

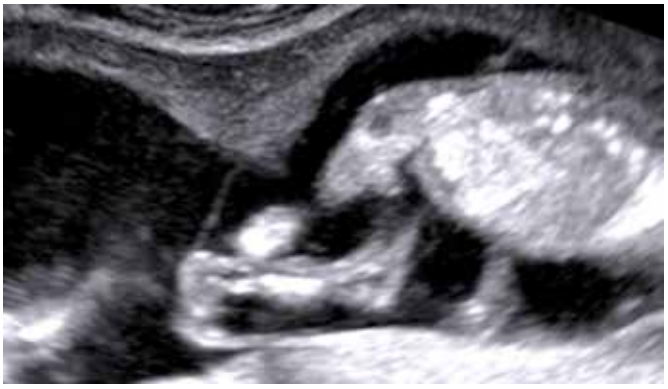

**Figure 2: T-sign in Monochorionic Diamniotic Pregnancy**

A Doppler ultrasound of the uterine arteries was also performed, which showed a mean PI of 1.77 (p62), indicating an increased risk stratification for preeclampsia and growth restriction, especially considering it was a twin pregnancy. As a result, a 150mg dose of aspirin was initiated. In the second-trimester morphological ultrasound, cardiac screening was found to be within normal limits for both fetuses; however, a single umbilical artery was identified in fetus [2].

Table 1 illustrates the longitudinal follow-up of fetal growth through biometric data and amniotic fluid measurements. It shows evidence of growth restriction in fetus [2].

| Feto 1 | Consulta 1 | Consulta 2 | Consulta 3 | Consulta 4 | Consulta 5 |
|---|---|---|---|---|---|
| CC | 24,2 | 29,1 | 28 | 29,5 | 28,1 |
| CA | 21,5 | 22,3 | 23,8 | 27 | 28,3 |
| CF | 4,3 | 4,7 | 5,8 | 6 | 5,7 |
| MB | 3,9 | 4,6 | 4,1 | 5 | 5 |
| PFE | 820 | 1034 | 1222 | 1607 | 1552 |

| Feto 2 | Consulta 1 | Consulta 2 | Consulta 3 | Consulta 4 | Consulta 5 |
|---|---|---|---|---|---|
| CC | 22 | 23,4 | 24,9 | 27,3 | 27,8 |
| CA | 19 | 20 | 21,1 | 23 | 23,8 |
| CF | 4 | 4,3 | 5,4 | 5,2 | 5,2 |
| MB | 3 | 3 | 3,1 | 3 | 3 |
| PFE | 495 | 786 | 958 | 1191 | 1270 |

**Table 1: Relationship of biometric parameters between fetuses, demonstrating a restriction in fetus 2, but with amniotic fluid with values within the normality parameter. HC – head circumference AC – abdominal circumference FL – femur length LP – largest pocket EFW- estimated fetal weight.**

On 12/29/2017, at 32 weeks of gestation, the patient went into labor due to a ruptured pouch, presenting a 3cm dilated cervix, and both fetuses with cephalic and breech presentation, which is why a surgical approach was necessary.

After the cesarean section, it was found that fetus 1 weighed 1685g and fetus 2 weighed 1200g, confirming growth restriction and the presentation of malformations. (tracheoesophageal fistula and agenesis of the thumb on the right hand).

During neonatal assessment, fetus 1 had a hyaline membrane, a respiratory disorder in which the alveoli of the newborn's lungs do not remain open due to high surface tension resulting from insufficient production of surfactant due to prematurity, but was discharged after 20 days in good conditions. Fetus 2 underwent gastrostomy and correction of the tracheoesophageal fistula (TEF), fistula dehiscence, developed aspiration pneumonia, septicemia and died on the 39th day.

## DISCUSSION

Ultrasonography in the first trimester has emerged as an effective method for early determination of chorionicity and amniocity. Performing ultrasound between the 11th and 14th week of pregnancy provides detailed images of the gestational sac, enabling the identification of distinctive characteristics between monochorionic and dichorionic pregnancies. In the case report, it was a diamniotic monochorionic pregnancy, the growth of the gestational sacs results in the obliteration of the extraembryonic space, allowing contact between them and forming a thin membrane. From the 10th week onwards, it fuses with the chorion forming a 90° T-shaped angle (T sign), with a higher frequency of complications such as fetal deaths, anomalies, growth restriction and prematurity. Monochorionics have a risk of fetal transfusion syndrome, polycythemia anemia sequence, reverse arterial perfusion syndrome and selective fetal growth restriction caused by vascular anastomoses present in the single placenta shared by the two fetuses [1-6].

In cases of selective growth restriction, the difference in weight between the fetuses is at least 25%, and one of the fetuses has an estimated weight below the 10th percentile for gestational age. This restriction can be classified as type [1], despite the difference in size between babies, the flow pattern in the umbilical cord is normal, despite being unique, with the chance of birth occurring earlier, as in this case. In addition to having a 30% rate of presenting other malformations, a change in genetic etiology is excluded as it is a monozygotic pregnancy and has the same genetic load [4,5].

An important finding in the case was the amount of amniotic fluid that was within normal limits in both fetuses, thus ruling out other differential diagnoses such as feto-fetal transfusion and vascular anastomoses (figure 3).

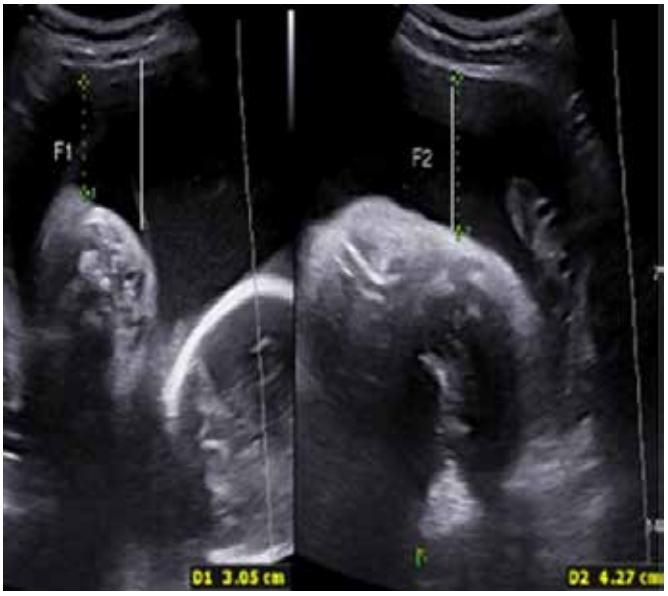


**Figure 3. Illustrates the measurement of the largest pocket of amniotic fluid in fetuses 1 and 2.**

At birth, it was seen that fetus 1, despite being prematurity, was discharged in good condition, but fetus 2, in addition to the restriction, had a tracheoesophageal fistula, a congenital malformation in which there is an abnormal communication between the trachea and the esophagus. TEF can occur alone or be associated with other congenital anomalies.

The exact causes of TEF are not yet fully understood, but it is believed that a combination of genetic and environmental factors may play a role in its development. Certain risk factors, such as smoking and exposure to toxic substances during pregnancy, have also been associated with a higher risk of TEF. It is confirmed by videofluoroscopy or bronchoscopy, allowing visualization of the fistula or abnormal contrast communication. Tracheoesophageal fistula treatment usually involves corrective surgery. However, the ideal time to perform surgery may vary depending on the severity of TEF and other associated medical conditions [7-10].

## CONCLUSION

The study of fetal twinning and selective growth restriction reveals a complex picture in the field of obstetrics and perinatal medicine. This clinical case shows the importance of defining chorionicity, reinforcing its screening in the first trimester of pregnancy, and adequate follow-up throughout the pregnancy to evaluate fetal biometry and amniotic fluid.

Fetal twinning itself is a unique phenomenon that can present different challenges and medical considerations. However, when selective growth restriction is associated with a difficult-to-diagnose malformation in one of the fetuses, without other signs that can help with the diagnosis, the complexity increases and more specialized care is required.

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