

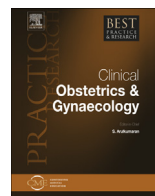


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Early pregnancy assessment in multiple pregnancies



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Early ultrasound assessment and accurate determination of chorionicity is crucial so that appropriate care of multiple pregnancy can be provided. It is best achieved in the first trimester of pregnancy using the Lambda 'λ' and 'T' signs. Accurate labelling of the twins is needed to ensure that the same individual fetus is measured through the pregnancy so that the longitudinal growth pattern can be correctly assessed. Discrepancy in crown-rump length indicates a possibility for future development of selective intrauterine growth restriction. Careful early ultrasound assessment is needed to identify structural and chromosomal anomalies, as twin pregnancies are at increased risk. Twin-to-twin transfusion syndrome, selective intrauterine growth restriction and congenital abnormalities represent the major determinants of perinatal loss in monochorionic pregnancies, and diagnosis and prognosis are discussed in detail. Treatment of twin reverse arterial perfusion sequence is more effective in early pregnancy, so early identification is needed. Outcome of conjoined twins is guarded, and is dependent on the extent of fusion, degree of sharing of organs, associated anomalies, and presence of cardiac failure *in utero*.

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Introduction

Multiple pregnancies are at increased risk of neonatal mortality and morbidity compared with singleton pregnancies. This may result from preterm birth, congenital abnormalities, growth problems, and unique complications related to monochorionicity, such as twin-to-twin transfusion syndrome (TTTS) and twin reversed arterial perfusion (TRAP) sequence. Early ultrasound assessment is crucial, so

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that appropriate care of these pregnancies can be provided. Determination of chorionicity in the first trimester allows stratification of the obstetric risk and the planning of subsequent scans, whereas accurate labelling of twins is fundamental for the evaluation of the longitudinal growth pattern of twins, especially when discordance is observed.

Early ultrasound assessment of congenital anomalies is important because congenital anomalies are more frequent in multiple gestations, and the presence of a structural or chromosomal abnormality leading to intrauterine demise may profoundly affect survival and neurological outcome of the surviving co-twin, particularly in monochorionic pregnancies.

In this manuscript, we provide an up-to-date review of the role of early ultrasound assessment in twin pregnancies, with particular focus on determination of chorionicity, twin labelling, early diagnosis of complication related to monochorionicity, and prediction of adverse outcomes.

Assessment of chorionicity

The pregnancy loss rate in monochorionic twins is significantly higher than that of dichorionic pregnancies, especially because of complications related to monochorionic placentation, such as TTTS [1–3]. Previous studies estimating pregnancy loss in twin pregnancies have found that most of these deaths take place before 24 weeks of gestation, when the likelihood of developing TTTS is significantly higher than in the third trimester of pregnancy [4–6].

Accurate determination of chorionicity is, therefore, mandatory in the routine care of twin pregnancies to distinguish which pregnancies are at risk and to allow the early detection of these specific complications. Several methods of chorionicity determination have been reported, such as the number of placentas, fetal sex, the presence and thickness of the inter-twin membrane, and the presence of 'lambda' or 'twin peak' sign in case of dichorionic and 'T' sign in case of monochorionic twins [7–11]. Ultrasound determination of chorionicity is best achieved in the first trimester of pregnancy using the Lambda (λ) and T signs. 'λ' or 'twin peak' sign refers to the classical appearance of the inter-twin membrane at its placental attachment. In the case of dichorionic placentation, the presence of a triangular tissue projection extending from the base of the inter-twin membrane gives the latter a characteristic appearance of the Greek letter 'λ'. This projection is produced by extension of chorionic villi into the inter-chorionic space of the twin membrane at the point where it encounters the chorion and placenta of the co-twin (Fig. 1a). In the case of monochorionic placentation, the lack of tissue projection into the inter-twin membrane prevents the formation of 'λ' sign, and the inter-twin membrane inserts perpendicularly in the placental plate (Fig. 1b) [12]. These two signs are mutually exclusive in twins with a single placental mass [13].

The largest study on the accuracy of the λ and T signs, and the number of placental in determining chorionicity in first-trimester diagnosis of chorionicity reported a sensitivity and specificity of 100%

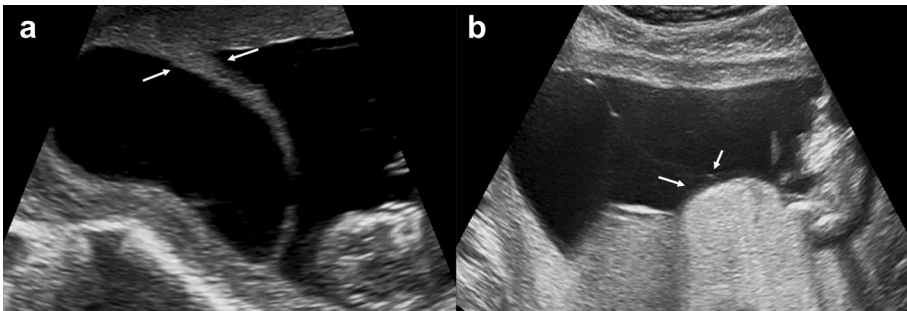


Fig. 1. How to differentiate between monochorionic and dichorionic twins. (a) In the case of dichorionic placentation, the presence of a triangular tissue projection extending from the base of the inter-twin membrane gives the latter a characteristic appearance of the Greek letter 'λ'; (b) in the case of monochorionic placentation, the lack of tissue projection into the inter-twin membrane prevents the formation of λ sign and the inter-twin membrane inserts perpendicularly in the placental plate (white arrows).

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