Best Practice & Research Clinical Obstetrics and Gynaecology 28 (2014) 319–326

Contents lists available at ScienceDirect

Best Practice & Research Clinical Obstetrics and Gynaecology

journal homepage: www.elsevier.com/locate/bpobgyn

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Timing of birth in multiple pregnancy

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Keywords:
monochorionic
dichorionic
risk of stillbirth
optimum timing of birth

Timing of delivery of twins should be decided when the benefit of prolonging the pregnancy outweighs the risk of stillbirth. Perinatal mortality of singletons is increased significantly after 42 weeks, whereas perinatal mortality in twins starts to increase significantly after 37 weeks. Recent, large cohort studies have showed significantly higher stillbirth rates near term even in apparently low-risk monochorionic twin pregnancies. Stillbirth risk in monochorionic twins is three-fold higher than in dichorionic twins, and this risk remains high throughout the pregnancy. In uncomplicated monochorionic twins between 32 and 37 weeks, no statistically significant increase of stillbirth occurs between 32 and 37 weeks; these pregnancies are usually monitored until delivery at 37 weeks. The risk of stillbirth in dichorionic twins does not seem to be different between 28 and 38 weeks, justifying a differential policy for the timing of delivery in monochorionic compared with dichorionic twin pregnancies. Therefore, uncomplicated dichorionic twins should be managed expectantly, and delivery can be arranged from 38 weeks. In cases of discordant fetal wellbeing at preterm gestations, timing of delivery should be based mainly on parameters and outlook for the healthy twin balanced against the condition of the compromised fetus. The threshold for early delivery may be lower in monochorionic twins because of the high mortality and morbidity in surviving twins with co-twin death.

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http://dx.doi.org/10.1016/j.bpobgyn.2013.11.001

Introduction

The management of multiple pregnancies forms an important cornerstone of modern antenatal care. In the past 3 decades, the incidence of multiple pregnancies has increased, mainly because of increasing use of assisted reproduction techniques, with more than one- quarter of in-vitro fertilisation pregnancies resulting in multiple gestations [1–5]. This increase in the incidence of multiple pregnancies after assisted reproduction techniques has been associated with dizygotic and monozygotic pregnancies [6,7]. The necessity of having evidence-based management strategies in multiple pregnancies is because they are at a higher risk of complications, such as preterm labour, fetal growth restriction, and preeclampsia, and they are also associated with a significantly increased risk of stillbirth compared with singleton pregnancies [8–11]. Therefore, timing of delivery in multiple pregnancies is crucial to mitigate the risk of these complications. This chapter will focus on the available evidence in deciding the appropriate timing of delivery in multiple pregnancies, with reference to twin pregnancies.

Accurate dating and assessment of chorionicity

Twin pregnancies are at increased risk of perinatal morbidity and mortality, compared with singleton pregnancies, mainly as a consequence of preterm delivery and fetal growth restriction [10]. An accurate estimation of the gestational age is vital to manage these complications. Considerable evidence suggests that twin pregnancies can be reliably dated using singleton crown–rump length charts between 11 and 14 weeks, and by fetal head circumference thereafter [12,13]. Biometry of the larger twin is more pragmatic than smaller twin in dating of twin pregnancy, as fetal growth restriction could exist even in an early stage [14]. No uniform policy of dating in in-vitro fertilisation (IVF) pregnancies exists and, as such, some chose the date of oocyte retrieval whereas others use the embryo replacement date for pregnancy dating [12,15]. To overcome this limitation, crown–rump length measurement between 11 and 14 weeks has been suggested, even in IVF pregnancies [16].

Perinatal mortality and morbidity among twins are determined by chorionicity, with a higher prevalence of complications in monochorionic compared with dichorionic twins [17–19]. Therefore, determination of chorionicity is the most important step in managing twin pregnancies. First-trimester markers of two different placental masses and lambda or ‘T’ sign are more reliable in determining chorionicity, as some of the other markers disappear with advancing gestation [20,21].

Mechanism for differing risks of pregnancy loss in monochorionic and dichorionic twins

The higher mortality in monochorionic twins is attributed to the effects of placental vascular characteristics and degree of placental sharing of each twin. Vascular anastomosis between both fetuses at the level of placenta is always present in monochorionic twins, and blood flow in these is often balanced. Up to 15% of monochorionic twins could be complicated by chronic twin-to-twin transfusion syndrome (TTTS) and selective fetal growth restriction caused by haemodynamic imbalance between these anastomoses and unequal placental sharing, respectively [22]. These complications of monochorionic twins are responsible for high early fetal loss rate, and it has been estimated in early research that pregnancy loss rate of monochorionic twins is 12 times higher than dichorionic twins before 26 weeks [17]. With the increasing use and experience of fetoscopic laser techniques, however, early fetal loss rate in monochorionic twins has been significantly reduced [23] (Fig. 1).

Late pregnancy loss in monochorionic twins is not as high as in early pregnancy, but remains higher than dichorionic twins at term. Reasons for term fetal loss in monochorionic twins are not well studied; however, twin anemia–polycythaemia sequence, acute fetal transfusions, congenital anomalies, and hidden fetal growth restriction are thought to be possible contributory factors. Twin anemia–polycythaemia sequence is characterised by large inter-twin haemoglobin differences without signs of twin oligo–polyhydramnios sequence [24]. Twin anemia–polycythaemia sequence may occur spontaneously or after laser surgery for TTTS. The spontaneous form complicates about 3–5% of monochorionic twin pregnancies [25]. The acute form of TTTS is unlikely in the antenatal period, and usually occurs during labour in monochorionic twins. A two- to four-fold increased risk of structural anomalies occurs