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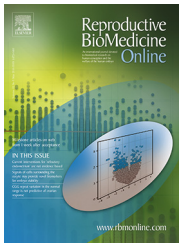

EDITORIAL

One plus one equals two: why fetal reduction is always a second-best solution

Multiple pregnancy is probably the greatest hazard of assisted reproduction treatment (ART). Many studies have shown the adverse effects of being born a twin or higher-order multiple on the health of offspring, mainly due to the effects of premature birth. These effects exist whether conception is achieved through intercourse or through IVF. Given the propensity of IVF specialists to transfer several embryos, multiple pregnancies continue to occur frequently after ART. Hence in order to avoid the burden of multiple pregnancies on mother and offspring, techniques have been developed over many years to allow for fetal reduction: reduction of a higher-order multiple pregnancy to twins or a singleton. The accepted method for doing this relies on abdominal ultrasound to guide a needle to allow termination of one or more of the pregnancies, whilst hopefully not disrupting the integrity of the entire gestation leading to miscarriage. This procedure is commonly carried out at 11 – 12 weeks of gestation by injecting potassium chloride into the chest cavity of each fetus selected for reduction. Fetal selection depends on ease of access, although in some cases those fetuses, which have increased nuchal translucency or other ultrasonographic markers of risk, are chosen. Some authors advocate karyotyping by chorionic villous sampling prior to fetal reduction, but this requires an additional procedure and, when the results of the karyotype become available, it is not always easy to be certain which fetus has a given karyotype.

Although physically safe for the mother, it is clearly suboptimal to perform a destructive procedure after so many weeks of pregnancy, at a time when developed fetal anatomy and movement are clearly visible on ultrasound. The authors of a paper in this issue of *Reproductive Biomedicine Online* (Haiyan et al., 2016) describe a method of earlier fetal reduction of triplets to twins or singletons using transvaginal fetal puncture and aspiration. This procedure can be carried out at between 6 and 8 weeks of gestation, several weeks earlier than the currently widely accepted method. The outcome reported in the study was generally favourable, with only 8 cases of post-treatment miscarriage out of 117 patients.

The main aim of the paper is to describe the outcomes of reduction of 33 dichorionic triplets to dichorionic twins (by reduction of one of the two monochorionic fetuses) or to a singleton pregnancy, with a comparison group of 84 trichorionic triplet pregnancies reduced to twins. Dichorionic triplets are rare, and consequently the results of fetal reduction in such cases have rarely been described previously. The authors describe two potential drawbacks to early reduction, namely that early reduction may not have been necessary, since in some cases there is a spontaneous reduction to a twin or singleton pregnancy between 6 and 11 weeks, and secondly that the small size of the fetuses precluded identification of fetal abnormality or nuchal translucency when selecting the fetus or fetuses for termination. In contrast, one of the potential major advantages of the early approach, which is not described in the paper, is its greater acceptability to women and their partners since the emotional impact on the couple of such an early termination must surely be less than when the procedure is performed later in pregnancy. There has been little research of the long-term psychological effects of fetal reduction on either the parents or on the surviving child or children when they discover that their (presumably healthy) sibling was terminated in order to improve their chances of intact survival. Given the frequency with which this procedure is performed in many countries, including the USA, this research gap should be closed.

The paper also tangentially describes a more fundamental difficulty concerning ART practice in China. The authors describe the desire of couples in China to have twins in order to circumvent the "one child policy" (relaxed since 2015). According to their paper, Chinese ART centres routinely transferred two or in some cases three embryos, with a twin pregnancy being seen as a preferred outcome, despite the hazards. Only parents of a triplet or higher-order pregnancy are offered fetal reduction. Perinatal mortality rates are four-fold higher for twins and six-fold higher for triplets than for singletons. Since the goal of infertility therapy is a healthy child, and multiple gestations put that goal at risk, multiple pregnancy must be regarded as a serious complication of ART. The best approach to avoiding multiple pregnancy is by single embryo transfer, thereby avoiding the physical risks and also the emotional and physical burden of later fetal reduction.

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Fetal reduction is a poor, second-best solution whether performed earlier or later in pregnancy. Many countries and fertility societies now have initiatives to reduce the number of multiple embryo transfers and the adage that "one plus one equals two" – in other words that a policy of transfer of a single fresh embryo followed, if pregnancy does not occur, by later transfer of a single frozen transfer is equivalent to the net pregnancy rate after transfer of two fresh embryos, but with a significantly reduced risk of multiparity, has been proven in several different settings. It is disappointing that this common-sense policy has not, as yet, been universally adopted by two such major developed nations as the USA and the People's Republic of China.

Reference

Haiyan, L., Ya, W., Yu, L., Xiaoli, C., Dongzi, Y., Qingxue, Z., 2016. Early fetal reduction of dichorionic triplets to dichorionic twin or singleton pregnancies: a retrospective study. Reprod. Biomed. Online pii: S1472-6483(16)00100-0. 32, 490–495.

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