


**IVF in the US: multiple gestation, economic competition, and the necessity of excess**

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In the practice of advanced reproductive medicine we have progressed from the miracle baby to the day of the litter. In a few short years we have radically changed the incidence of multiple gestation, yet we have virtually no idea of the long-term impact these changes will have on our patients, their children or society. There is ample evidence of the immediate costs of treating these complicated pregnancies and an entire practice, almost a growth industry itself, of multifetal reduction has been born as a result of the practice patterns of infertility specialists in the US. Clearly, the progressive increase in pregnancy rates that has occurred in most programmes reflects the additive effects of improvements in the clinical management of patients and in laboratory methods. With increased success has come the now commonplace occurrence of higher order gestations and the ‘epidemic’ of multifetal reductions. I believe that the roots of this phenomenon lie not in the inability among in-vitro fertilization (IVF) practitioners to recognize this dramatic change in outcome, but rather in the nature of competition among IVF clinics with similar levels of competence, and the intentions of those providing these services to attract new infertility patients or maintain those already in their programme. It is my belief that such pregnancies represent a failure rather than a success of the IVF enterprise.

Selective intrauterine abortion is only the most obvious symptom of the larger issue of multiple gestation. I believe the rightness or wrongness of this practice has nothing to do with the abortion issue. Regardless of the pro-life feelings of a patient, she cannot ignore the poor outcome of higher order
multiple gestations. She must face the real possibility of having no healthy children if she were to continue such a pregnancy. Likewise, very few infertility patients start care with the idea of one day having to make a decision regarding abortion. Thus, in the individual case the morality of multifetal reduction has little relevance, it is a matter of making the best of a bad situation as the patient’s conscience allows. The ethical dilemma of multifetal reduction relates to its role in encouraging clinicians to increase the risk of its necessity by exonerating their irresponsible practices. The ethical conflict is magnified by the fact that the clinic reports these pregnancies as a success while it is ultimately left to the patients to deal with the psychological consequences of fetal reduction and financial and emotional consequences attendant with three, four or even five babies if reduction is not elected.

The incidence of multiple gestation has continued to increase [Society for Assisted Reproductive Technology (SART) and The American Society for Reproductive Medicine (ASRM), 1996]. One might have predicted that clinicians would change their practice in order to maintain acceptable pregnancy rates while limiting the multiple pregnancy rate. In fact, every ASRM/SART report shows only higher multiple rates (SART/ASRM, 1996). The easy access and improving success of multifetal reduction allows clinicians to place embryos without enough concern about multiple pregnancies. Thus, the relationship between the infertility specialist and the one who cleans up the mistakes is a symbiotic one. By making the complicated pregnancy someone else’s problem, the incidence of the problem only increases.

We cannot know the precise extent of multiple gestations that result from assisted reproductive technology (ART) procedures. The last summary from the ASRM/SART reports results from clinics in 1994 and demonstrated a 36.3% multiple pregnancy rate, with 6.7% triplets or higher (SART/ASRM, 1996). Furthermore, 55% of the children born from in-vitro fertilization (IVF) and gamete intra-Fallopian transfer (GIFT) in 1994 were from multiple gestation, with 15% part of a triplet or higher pregnancy. Of course, we have no data regarding how many pregnancies and fetuses were reduced to arrive at that number.

It would be unfair to charge that this is a problem that only occurs in programmes where there is a blatant disregard for patient safety. In our own programme we have seen a progressive rise in the percentage of higher order multiple gestation. We have transferred fewer embryos than ever, but our twinning rate hovers around 50% and triplets account for ~10% of the pregnancies in 1996. We have tried to use ultrasound Doppler flow patterns and observations of very early embryonic development to pick the best, and thereby limit the number of embryos placed. Nevertheless, along with increasing pregnancy rates we have increased the multiple pregnancy rate.

The cost of these higher order pregnancies has been documented in many studies. One study from Boston reported that just the hospital maternal and neonatal care was >US$109 000 for the average triplet gestation in 1994, or 11 times higher than a singleton pregnancy (Callahan et al., 1994). This cost pales in comparison with the cost of raising three children simultaneously, especially if, as in 40% of quadruplet deliveries, one of the children has a significant developmental delay (Evans et al., 1990).

Prospective patients may not appreciate the incidence of multiple gestation or the need for eventual reduction. While pregnancy rates are published and disseminated among infertility support group members, the risks of treatment may not be as well appreciated. As long as this continues, physicians will only be encouraged to place higher numbers of embryos to increase their pregnancy rates, with the obvious result of increasing multiple gestation.

A recent survey of infertility patients clearly demonstrated that they overwhelmingly desire multiple gestation (Gleicher et al., 1995). Only half of these couples objected to triplets and 20% found quadruplets acceptable. To the patients, failure is defined as a negative pregnancy test. The physicians must decide their role in this conflict. Do they act as the patients’ agent in providing the outcome they desire, or do they attempt to educate and even deny the service that the patient desires? As providers we must look beyond a laboratory test and to the health of the mother during the pregnancy and to the health of the children that result. Despite the fact that multiple gestation accounts for the majority of neonatal morbidity in IVF patients (Tan et al., 1992), some fertility care providers see their role as accommodating the patients’ desire for this outcome. Rather than educate their patients about the risk of permanent disability to children of higher order gestation, these providers apparently believe that this is an issue of patient choice. The physician–patient relationship implies that the physician will act in the patient’s best interest; that responsibility cannot be abdicated, regardless of the patient’s desires or the possible impact on the economic health of the physician’s practice. It is simply wrong to practice medicine in any way that does not minimize the risk of complications. If no one else has the perspective, we must be able to see that there are worse outcomes than not being pregnant.

The reporting system for infertility clinics and the way it is used in this country bears part of the responsibility for the continued increase in multiple pregnancy. The SART database was originally developed to protect patients from clinics where pregnancy rates were very poor. Today, however it is used as advertising and a way of comparing successful clinics. Many clinics send out annual reports of their statistics. Infertility support groups encourage its use for this purpose and the media is happy to report that Dr X has the best pregnancy rates in the city, state, country etc. It is possible, therefore, that the system devised to protect patients may increase their risk of this complication by encouraging physicians to seek and report the highest pregnancy rates.

Insurance coverage patterns in the US also contribute to the high incidence of multiple gestation among IVF patients. Typically, patients do not have insurance coverage for ART procedures, but have full benefits for pregnancy care. Thus, to the patient, the financial risk is in having an unsuccessful IVF cycle, not in the often exorbitant costs of the resultant multiple gestation. If third-party payers want to reduce the cost of IVF pregnancies, they need to become involved in the payment of IVF. This would reduce the pressure on patients and their fertility specialists to have a pregnancy at any cost.
In addition, if they are paying the bill they could reasonably ask to limit the number of embryos placed.

I believe that the incidence of multiple gestation and the need for multifetal reduction will continue to increase until infertility specialists, patients, and those paying for the results of these pregnancies agree that this is a serious concern. I also believe that we can best address these concerns in the privacy of the physician–patient relationship rather than governmental regulation, although if this does not happen, some sort of control would be an improvement over the current system. In order for this to happen, however, all parties involved need to modify their behavior. Clinics need to stop gauging their worth by a pregnancy rate, and patients must support clinical decisions that increase the probability of having healthy children, even if the result may be a marginal decrease in pregnancy rate.

We who provide these services are entitled to celebrate our patients’ successes. There are many thousands of families with children who were born as a result of the advances in reproductive medicine and the dedication of clinicians and scientists devoted to the field. I fear that we may not be as proud of the changes we have brought about in our society and the premature and subsequently damaged children that have been a result of preventable multiple gestations.

References


Imposing limits on the number of oocytes and embryos transferred: is it necessary/wise or naughty/nice?

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Twins, triplets, and more! They are everywhere; in the playgrounds, schools, shopping malls and often featured in the media. As assisted reproductive technologies (ART) become more widely applied, there is a justifiably growing concern about the resulting greater percentage of multiple pregnancies. The obvious considerations include the possible maternal and perinatal morbidity and mortality of such pregnancy and premature delivery with its associated increased psychosocial and financial costs.

Practitioners have known for many years that the pregnancy rate per completed ART procedure increases when a greater number of oocytes or embryos are transferred. For instance, the pregnancy rates reported by French National IVF Registry (FIVNAT) for the years 1986–1990 ranged from 9.1–12.1% for one embryo transfers and incrementally increased for transfers of two, three and four embryos with rates of 29.5–34.9% for transfers with four embryos (Walters, 1996). However, replacing a higher number of oocytes in gamete intra-fallopian transfer (GIFT) or embryos following in-vitro fertilization (IVF) also proportionally increases the probability of a multiple gestation of not only twins, triplets but also of higher order (more than triplets) (Walters, 1996). Therefore, the transfer of multiple oocytes or embryos is advantageous in achieving pregnancy but has concomitant increased risks (Franco, 1994). These risks can seriously affect the desired overall outcome of yielding a reasonable number of healthy babies without total financial as well as emotional bankruptcy of the treated families and/or the medical reimbursement system.

The advent of embryo cryopreservation, in the programmes where it is successful, has relieved practitioners of the necessity to inseminate only a limited number of oocytes, to transfer all the oocytes or embryos generated in one cycle, or to discard normal supernumerary embryos. Despite the availability of cryopreservation, it is not unusual for ART programmes to transfer three or more embryos in IVF (World Collaborative Report, 1993) and four or more oocytes in GIFT (Redgment et al., 1994). This generally results in a better pregnancy rate than the transfer of two or more embryos or fewer than four oocytes respectively. The probability of obtaining a multiple pregnancy is related to the cumulative prospect of survival and implantation of each individual embryo transferred or generated in vivo in GIFT. Undoubtedly, there are many factors, both known and unknown, that may affect implantation rates. The most widely observed and important is the age of the woman providing the oocytes for IVF or GIFT (Tan et al., 1990; van Kooij et al., 1996). Assessment of oocyte maturity and of embryo quality by morphological appearance and rate of cleavage, although not entirely reliable, gives the clinician an approximation of a particular oocyte’s prognosis for fertilization (for both GIFT and IVF) and of an embryo’s chance of implantation in IVF (Steer et al., 1992; Shulman et al., 1993).

Mature oocytes are required for normal fertilization and the faster cleaving and better looking embryo has generally a higher implantation rate. Likewise, embryos from younger women in general have a higher likelihood of implanting. This is nowhere more apparent than when glancing at the overall results for ovum donation programmes.

In general, the reported success rates for GIFT are slightly better than for IVF (Meirow and Schenker, 1995). Unquestionably, the populations subjected to these two techniques are not the same. More importantly, it appears that GIFT may be better than the transfer of multiple oocytes or embryos.