OPINION

When to avoid creating surplus human embryos

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The advice that should be given to a couple considering assisted reproductive technologies for the treatment of their infertility, when they are completely opposed to the destruction of surplus embryos, is discussed. It is urged that they do not use treatments that generate surplus embryos. They should be given the options of declining IVF and considering adoption, or less efficient treatments, namely limited ovarian stimulation, limited insemination of available ova or natural cycle IVF where no surplus embryos are generated.

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The two cases described by de Lacey and Norman (2004) involved decisions about the fate of extra cryopreserved human preimplantation embryos after the birth of impaired babies. The couples owning the frozen embryos were absolutely opposed to their disposal unused or to using them for research. They insisted that the spare embryos be donated to another couple. The cases are likely to be rare. Embryo transfer is not allowed in several countries for ethical, religious and legal reasons. Nevertheless, the two cases demonstrate the need for couples creating frozen embryos to be clear about their disposal at a later time.

de Lacey and Norman, in their paper, have reviewed the ethical issues raised by these cases. They point out that the problem is multifaceted where several ethical and legal issues vie for our attention. These include informed consent, the best interests of the child, the assessment of risk and the spectre of eugenics. Although these academic considerations highlight the problems, there is no neat solution to the problem. The difficulty in finding a universal solution is that our individual ethical values vary enormously, sometimes irreconcilably, due to our different cultural and educational backgrounds on the nature of human embryos (Biggers, 1989). Our only recourse is to resolve ethical impasses by avoiding them. How can we avoid the type of cases described by de Lacey and Norman?

We suggest that the incidence of such cases can be minimized by careful and directed discussion with potential IVF patients about their feelings and beliefs regarding the fate of supernumary embryos that may be produced during the course of treatment. The patients should be told that standard IVF treatment protocols may result in the production of extra embryos and that they will be required to make a decision about the disposal of these embryos. Their options are that the extra ‘normal’ embryos can be discarded as soon as the transfer is done, used for research, which will result in their destruction before the implantation stage of development, frozen for future use by themselves, or donated. It should also be pointed out that freezing embryos may merely postpone a decision about their disposal should the patient attain the desired family size. If their feelings or beliefs prevent them from agreeing to embryo destruction under any circumstances, they should be given the option of declining IVF for the treatment of their infertility and consider adoption. Alternatively, these patients may also wish to consider using limited ovarian stimulation, limited insemination of available ova or natural cycle IVF, so that only one or a few embryos are created for transfer in a fresh cycle. All zygotes considered by the embryologist to be normal would be replaced in the patient and no embryos would be cryopreserved. The patients should be informed that some of these treatment options may have a lower probability of success than using conventional controlled ovarian stimulation protocols.

In the event that a couple decided to store embryos from the first treatment cycle, and a term pregnancy resulted, they should also be asked to consider beforehand the scenario where the baby was impaired. One solution to a total refusal to have their embryos destroyed is to use the embryos themselves to attempt another pregnancy. If they say that they have reached a desired family size and that they would like to donate the embryos to treat the infertility of another woman, they should be informed that they would have duties relating to the right of informed consent of the recipient. This requirement means that there must be total transparency with respect to the health of the donors (male and female) and the baby or babies produced by the IVF procedure that resulted in the surplus embryos. The potential donors should
be told that it is mandatory for the recipient to be informed that the donated embryos came from a cohort of embryos that gave rise to an impaired baby, including full details of the impairment. The donors and proband would be required to undergo examination and testing to determine whether the impairment is due or not due to an identifiable genetic cause. After consultation with a clinical geneticist, the risk of the birth of another impaired child to a potential recipient could be roughly assessed. It would be the duty of the physician, as well as the ethics committee associated with the infertility clinic, to make sure all relevant information had been provided.

Ultimately, the decision of the recipients to accept donated embryos must be based on the risk of producing another severely impaired child when assisted reproductive techniques are employed to treat infertility. At the time the first IVF baby was produced (Steptoe and Edwards, 1978), there were no epidemiological studies on the natural incidence of human congenital abnormalities (reviewed by Biggers, 1983). In 1981, an extensive study of the natural incidence of human congenital abnormalities was published as part of a programme of Child Health and Developmental Studies at the Kaiser Hospital, Oakland, California (Christianson et al., 1981). The published data vary according to the severity of the defect. Christianson et al. (1981) classified the defects into trivial, e.g. skin tags, umbilical hernias, supernumerary nipples; severe, i.e. conditions that are life threatening, or if not treated would impair the child’s development or well-being; and moderate, i.e. a group that are neither trivial nor severe. The results showed that severe cases of congenital abnormality occurred naturally in ~1% of live births and that the incidence increased to ~4% by 5 years of age. Since then, a number of studies have been done on the incidence of congenital abnormalities following IVF (e.g. Westergaard et al., 1999; Ericson and Källén, 2001; Anthony et al., 2002; Zádori et al., 2003). The combination of all these data to give an accurate estimate of the incidence of congenital abnormalities is difficult because of questions about the uniformity of the statistical techniques employed and the differing definitions of the severity of the congenital conditions. Nevertheless, it appears that there is a slight increased risk of serious congenital abnormality following IVF. However, the increase may be due not so much to the IVF technique itself but to the characteristics of the donors and the multiplicity of the pregnancy (Westergaard et al., 1999; Edwards and Ludwig, 2003). It may not be coincidental that one of the two cases described by de Lacey and Norman is from a triplet pregnancy. The male partner is included since it has been shown, for example, that there is an increased risk of a genetic abnormality using sperm from men with severe oligozoospermia and azoospermia (Dohle et al., 2002).

The potential donors should be told what specific advice would be given to potential recipients. The advice would be the same as that given to a couple wishing to attempt another natural pregnancy after giving birth to an impaired child. The recipients would be told that an impaired child may arise from genetic (severe point mutations, complex multifactorial causes, chromosomal aberrations) or non-genetic causes (iatrogenic causes, multiple pregnancy, maternal systemic disease, maternal infection), and that in a normal pregnancy there is at least a 4–5% risk of the birth of a severely impaired baby. If investigation by a clinical geneticist unmasked a serious known genetic mutation, the risk of an abnormal child would be 25 or 50% depending on whether each parent carries a gene mutation for an autosomal recessive disorder, or one parent for a dominant disorder. If there was no evidence of a genetic mutation, they would be told that the risk of another impaired baby may be slightly higher than the background natural risk of ~4–5%. It may also be greater if the male donor is older (Sloter et al., 2004). Many potential recipients opting for treatment accept these levels of risk, particularly if they are willing to use subsequent genetic screening and, if necessary, abortion. Potential donors who are absolutely unwilling to have their embryos destroyed would not consider giving them to a recipient who might resort to an abortion after learning a fetus was abnormal. The potential donors should be made to realize that they could have no control of the final fate of their embryos since donations of embryos are usually done anonymously. They may then want to waive the usual anonymity by seeking potential recipients who would undertake not to have genetic screening and subsequent abortion. The potential donors should then be warned that this requirement raises special sets of legal issues.

After going through these scenarios, it may be hoped that the patients would decide not to seek standard assisted reproductive technologies for the treatment of their infertility but instead opt either for less efficient methods not involving embryo storage or for adoption. If the patients insisted on using efficient methods, storing spare embryos and seeking known recipients with the hope of having control over the recipients decisions, the clinician and an ethics committee should have the right and legal protection to refuse to accept the donors as patients.

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References


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