DEBATE concluded

Destruction of cryopreserved embryos

On the disposition of cryopreserved human embryos: An opinion

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The recent destruction of 3000 embryos in the UK dictated by Parliamentary law underscores the potential pitfalls inherent in allowing political expediency to supersede basic ‘human-ness’ and commonsense. With the passage of the Human Fertilisation and Embryology Act (1990), an act which contained a 5 year limit on embryo storage, the British Parliament, although well meaning and perhaps with the best intentions, gave credence to the notion that political bodies are unable to fully appreciate the enormity of such biological decisions. This ‘law’ was presumably intended to limit the ever-increasing accumulation of frozen embryos, thus protecting institutions and practitioners from future liability and exposure to the ethical dilemmas inherent in maintaining (or assuming) indefinite responsibility for such embryos. Unfortunately, the law did not recognize or protect the biological rights of the parents. The fundamental flaw in this legislation was not the shortsightedness of limiting storage to 5 years, but rather that the very act did not endeavour to ensure that the parents dictated the disposition of their embryos.

Legislative bodies, including the British Parliament, may not be sufficiently equipped to consider or legislate on issues related to biological phenomena. In their zeal to protect the public, and even perhaps the embryos, these legislators have failed.

In matters relating to the ultimate disposition of embryos, it would be far better if a greater degree of flexibility had been displayed. An alternative policy might have entailed obtaining explicit informed consent vis-à-vis future disposition, prior to the cryopreservation procedure, thus enabling the couple to define the disposition of any potentially cryopreserved embryos. Moreover, potential scenarios including divorce, death of one or both partners, or even a change of heart by one or both partners should be adequately delineated in such consent documents. Such documentation would circumvent the need for contacting the prospective parents if they do not claim their embryos before the stated date of cryopreservation limit, as it would also allow them to donate their embryos to other couples or even designate them for preimplantation research.

Documentation relating to ownership and disposition of embryos should become a matter of practice, not by legislation but by mutual consent of the practicing in-vitro fertilization (IVF) specialists and the couples in question. No legislation should be instituted when the fundamental freedom of choosing the fate of one’s biological material is the issue. This is a matter of basic individual rights.

The passage and implementation of this storage limiting act is a testimonial to the folly of allowing politics to interfere with basic biological rights. We fully agree with Drs Edwards and Beard: one cannot simplify or legislate on matters which deal with complex biological, personal and ethical issues. These issues should be dealt with by the parents and those who adhere to the ancient Hippocratic Oath: ‘Do no harm’ with the fullest respect for individual and biological rights.

Destruction of cryopreserved embryos

Frozen preimplantation embryos: Parental responsibility versus laboratory liability

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On August 1, 1996, nearly 3000 frozen preimplantation embryos were destroyed in the UK. This action was required by English law in compliance with the Human Fertilisation and Embryology Act (1990) (hereafter referred to as the ‘Act’), legislation that dictated a maximum 5 year storage limit for all cryopreserved material generated through in-vitro fertilization (IVF) procedures. The Act unequivocally stated that the destruction of these healthy preimplantation embryos could be delayed only if a formal request for extension was received from both parents before midnight, July 31, 1996. Individual IVF clinics were responsible for obtaining such consent from parents before the deadline, and when indicated, for contacting general practitioners or local Health Authorities to ask for assistance in locating missing or unresponsive parties. Fuelled by intense public criticism, last minute efforts were made to contact parents and fully inform them of the actions that were about to be undertaken. A total of 3000 preimplantation embryos, all of which had been cryopreserved with the intention of replacing them in a uterus for purposes of establishing pregnancy, were now threatened with being thawed and discarded. How did this situation arise? How could it have been averted?

In order to fully understand the English predicament, a brief
overview of standard infertility treatment may be necessary. Few individuals, other than those directly affected, realize the high prevalence and intense personal anguish involved with being denied one of the most basic of human experiences, the ability to bear a child. It is estimated that one in eight couples will seek medical assistance for reproductive disorders (Guzik, 1996). Many forms of treatment will fall under ‘low tech’ methodologies, e.g., the evaluation and treatment of male or female hormonal disorders, surgical correction of anatomical reproductive tract anomalies, stimulation of the ovaries to produce more than one oocyte (egg) each month, or artificial insemination using husband’s or donor’s spermatozoa. If these methods fail, ‘high tech’ intervention is indicated, usually involving IVF and/or microsurgical techniques to assist the fertilization process. During IVF, a woman’s ovaries are stimulated with hormones in order to recruit multiple ovarian follicles. As a result, several oocytes may be produced at one time and are available for fertilization outside her body, in a clinical laboratory. Once spermatozoon and egg have been joined together, a preimplantation embryo will develop over the next 2 days (no embryonic tissue is differentiated at this early stage, nonetheless, the term ‘embryo’ is commonly, but incorrectly, used). Since the couple may possess several developing preimplantation embryos, more may be available than can be immediately placed in the woman’s uterus in hope of establishing a pregnancy; to avoid the risk of multiple gestation (twins, triplets, or quadruplets), surplus developing preimplantation embryos are usually frozen, or cryopreserved, for future use. If the couple fails in their effort to produce a pregnancy from the first attempt, or if a healthy child is delivered and the couple wishes to conceive again, they may return to the clinic to have the frozen preimplantation embryos thawed and replaced. This freezing process is also ‘high tech’ and involves very low storage temperatures (–196°C); it is estimated by scientists that preimplantation embryos may be frozen for up to 1000 years without damage (Schneider, 1986), thus creating an image in the public eye of a potentially frightening ‘Brave New World.’ In fact, the freezing procedure is both reasonable and responsible, and certainly a better alternative to disposal. However, a myriad of problems can follow its practice. Husbands and wives occasionally divorce, creating custody battles over frozen preimplantation embryos (US, 1989; Davis versus Davis); parents may perish in unforeseen accidents or through disease processes, leaving the fate of frozen preimplantation embryos in limbo; parents may abandon their frozen preimplantation embryos; parents may fail to pay freezing or storage fees, leaving clinics to absorb these costs with no ethical or legal recourse available; or, the sheer number of frozen preimplantation embryos remaining stored in an individual clinic may represent a tremendous medical and ethical responsibility as well as demanding much in terms of economic maintenance and physical space. As a result, many countries such as the UK have passed laws to place time limits on the length of cryostorage, intended chiefly to address the problems and responsibilities of long-term care of abandoned preimplantation embryos. The Human Fertilisation and Embryology Act of 1990 was specifically outlined to provide such legislation. In the Act, it was clearly detailed that parents must provide written, tangible evidence of their desire to maintain storage of frozen material after 5 years, otherwise such material would be destroyed. This Act was not intended to create hardship for parents or clinics, but was drafted simply to address the many problems outlined above. One must applaud the efforts of the UK for having the foresight to draft such a law, and for being courageous enough to publically address such a tricky ethical issue in the first place (many countries have taken no moral or legislative stance at all).

In a recent debate article (Edwards and Beard, 1997), Drs Edwards and Beard admonish the Human Fertilisation and Embryology Authority (HFEA), the body responsible to Parliament for ensuring the practice of IVF along ethically-responsible lines as defined by the Act, for demanding compliance of the 5 year storage limitation. They state that many couples failed to receive notice of the impending destruction of their preimplantation embryos, failed to make the choice to send their written request for extension, or represented couples who were at odds with one another in the decision-making process. In some clinics, more than half of the affected couples failed to respond. Drs Edwards and Beard argue that: ‘Embryologists in each IVF clinic consequently had to make up their minds about what to do in these circumstances. Many of them, although by no means all, did not wish to destroy the [pre]embryos, and some refused to destroy them on ethical grounds. They argued that many patients would not receive the letters in time or would face unique family or other problems in deciding what to do with their [pre]embryos. The HFEA countered by suggesting that another embryologist without such ethical scruples could undertake the task of destruction, either from within that clinic or from a different one. Although this solution did nothing to remove the ethical objections to the wastage of such carefully preserved [pre]embryos, the HFEA remained adamant that the full force of law would be directed against any clinic failing to destroy its cohort of [pre]embryos’.

Is it fair to condemn the HFEA under these conditions? Were not all parties involved — parents, physicians, embryologists — aware of the impending date of legislative enactment for >5 years? Can anyone imagine that this was not an acceptable length of time for couples to make appropriate decisions? Drs Edwards and Beard go on to say: ‘Appeals for a legal stay of execution were made by particular classes of patients, e.g., those whose [pre]embryos had entered storage prior to 1991, or where donor spermatozoa had been utilized. A wife whose divorced husband refused to give consent took her case to court and won a delay in the date of destruction. Without exception, such appeals merely delayed the requirement to destroy the [pre]embryos by a few days in some cases. One lawyer wrote to all IVF clinics to point out that some patients might subsequently be able to sue the embryologists who destroyed their [pre]embryos. . . . The [pre]embryos are now all destroyed. A rigid law has triumphed over what many people believe to be common sense’.

Perhaps the current problem in the UK simply involves lack of thoughtful planning and the disbelief that the law would be enforced. For the future, it would appear that two important
provisions must be considered and agreed upon by parents, physicians, scientists, and legislators:

What must be considered an appropriate limitation of storage? Does an arbitrary 5 year limitation place a burden on some couples who have been fortunate enough to have preimplantation embryos cryopreserved? Ten years might be deemed more reasonable by opponents of the legislation, yet the problems of long-term cryostorage responsibility for individual clinics are not resolved. One might consider cryostorage appropriate until a maternal age of 55 is reached in order to address the ethical issues surrounding a preimplantation embryo’s potential for pregnancy after transfer to the mother, but this, alas, opens up a Pandora’s box for other debates over the ethical implications (pro and con) of allowing or denying a woman the opportunity for pregnancy after the menopause. To this author’s thinking, 5 years is reasonable as long as all parties are aware of the limitation in advance and the parents retain the option to extend the cryostorage period.

Informed consent must be documented detailing the agreed upon limitations of cryostorage and clearly outlining parental options

A couple must be made aware of the date when final disposition will be carried out. During IVF treatment, couples should be required to sign an informed consent agreement that gives the exact date of disposition and details any options possible for alternate disposition. This agreement must be made between parents and clinics before freezing and should further specify a parental choice for the method of final disposition (donated to another couple, donated for research, or destroyed) in the event parents cannot be contacted at the end of the storage period. In this manner, ‘orphaned’ preimplantation embryos may be consensually donated for constructive purposes rather than simply destroyed. In the UK, >6000 other frozen preimplantation embryos were appropriately taken care of after parents made informed decisions regarding their fates. Depending on the clinic involved, 47–57% of couples donated their frozen conceptuses to research (legal in UK for preimplantation embryos under 14 days of development), 25–30% kept them frozen for their own later use in establishing pregnancy, 10–15% donated them to other infertile couples, and 8% chose to have them discarded (The Times, July 23, 1996). The methods for implementing consensual agreement in advance of freezing were elegantly discussed by Jones (1992).

It is unimaginable that parents with cryopreserved, stored preimplantation embryos would allow their conceptuses to be orphaned, whether residing in the UK or elsewhere. To have no contact with the participating IVF clinic for periods >5 years, to move and leave no forwarding address, to abandon such a major responsibility represents a situation that is very difficult to understand. The responsibility of the IVF clinic itself remains immense; care must be taken to ensure appropriate cryostorage conditions for ever increasing numbers of conceptuses over long periods of time. One can recognize the problems surrounding decades of storage when parents fail to make informed decisions concerning their progeny. While the situation must be rectified, it must be done in a manner appropriate to these special circumstances and special medical technologies. It seems not unimaginable to consider that legislative action will ultimately follow these practices.

All of us carry our own ideas regarding the sanctity of human life, the moment of ‘ensoulment,’ and concerns about new reproductive technologies. While one person may regard the destruction of a preimplantation embryo to be a very early mode of abortion, another individual may support the contention that few human or legal rights should be granted to an undifferentiated mass of cells. I would contend that the undifferentiated conceptus or preimplantation embryo does possess moral rights for protection, much more so than the oocyte or the spermatozoon, but certainly less than the actual differentiated embryo or fetus. At the 1–4-cell stage of development, or just after fertilization, the conceptus has not been programmed which of its cells will become an embryo or which are destined to become placenta and supporting structures. Many of the cells in the preimplantation embryo will never contribute to a living human being. Nor is the preimplantation embryo itself destined to become an ‘individual,’ since twinning is possible until the second week. Twinning would result in two identical embryos — how precisely does this biological fact fit into concept of ‘ensoulment’ and what point it occurs during human development? One criticism by pro-life activists exists in the argument that these early conceptuses possess the ‘potential’ for human life. Wentz (1996) gives an overview of the position on ‘potentiality’ taken by the philosopher, John Harris (1990), of the University of Manchester. Wentz writes that Dr Harris considers the following: ‘if we wish to observe the ‘potentiality argument,’ we have to regard as morally significant anything with the potentiality to become a human being, including sperm and oocytes’. Yet nature discards billions of these gametes every day. Harris concludes that preimplantation embryos should be regarded in terms of what they are now, not in what they may become: ‘We are, [in the end], all potentially dead, yet no one supposes that this fact constitutes a reason for treating us as if we were dead already’. With such ideas in mind, I would take the position that the destruction of very early conceptuses is morally acceptable, albeit personally undesirable, under conditions of parental abandonment. Although not in full agreement with this position, Dr Edwards’ views must be weighed with seriousness and respect, as he represents one of the finest scientists of this century. Intensely political by nature, Dr Edwards analyses his topics subjectively and generally distributes criticism only after a just, considered thought process. One suspects that his dispute with the HFEA is not so much a moral one as a political and humanly compassionate one.

The USA will ultimately have to deal with the problems recently encountered in the UK. It is estimated that >100 000 frozen preimplantation embryos are stored in liquid nitrogen filled tanks across the USA (Tucker, 1996). Will we be ready?

References


