

Posthumous reproduction with surplus in vitro fertilization embryos: a study exploring users' choices

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Objective: To report results of analysis of in vitro fertilization (IVF) users' choices regarding the potential use of their surplus cryopreserved embryos for posthumous assisted reproduction (PAR).

Design: Examination of signed consent forms.

Setting: Public IVF clinic.

Patient(s): A total of 498 individuals who had signed consent forms for cryopreservation of surplus embryos.

Intervention(s): Content analysis of consent form.

Main Outcome Measure(s): Agreement to PAR; importance of appropriate counseling within the consent process.

Result(s): Approximately 68% of individuals consented to the use of surplus embryos for embryologist training and improvement of assisted reproductive techniques, and 56% consented to the use of surplus embryos in a research project; 73.5% of men and 61.8% of women agreed to leave their cryopreserved embryos to their partners for reproductive use in the event of their death.

Conclusion(s): Our results demonstrate that a majority of both men and women agree to leave their frozen embryos to their partners for PAR in a "real life" context, i.e., in which they were required to provide consent for this prospective option. PAR involves complex issues, including the psychologic aspects of initiating a pregnancy while mourning the loss of a loved one or the effect on the prospective child. We argue that in light of the acceptability of PAR—as demonstrated by our results—further research is required regarding how to best counsel and inform IVF users about the choices they are making in this context, to ensure that their consent for PAR is in fact well informed. (Fertil Steril® 2014;102:1410–5. ©2014 by American Society for Reproductive Medicine.)

Key Words: Embryos, posthumous assisted reproduction consent, counseling, IVF

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The use of in vitro fertilization (IVF) to overcome infertility is increasing. Approximately 1.5 million IVF cycles are performed each year worldwide, with an estimated 350,000 babies born (1). In the Canadian province of Quebec, where IVF is publicly funded since August 2010 (2), 24,300

cycles were performed from August 2010 to October 2013 (Gagnon F, personal communication, November 2013).

Because many cycles of IVF involve the creation of more embryos than can be implanted in the uterus, current practice is to freeze these embryos for possible future use. The

number of surplus frozen embryos is therefore increasing, creating challenges for IVF users and clinics. The actual number of frozen embryos is not known. A recent publication estimated the number of frozen embryos in the US to be 1,390,351 (3). At the IVF clinic at Montreal University Hospital Center (where our study was carried out) in 2012, 219 cycles of IVF resulted in an average of three frozen embryos per cycle, and in 2013, 398 cycles of IVF resulted in 2.5 frozen embryos per cycle (Dean N, personal communication, May 2014).

In some countries, regulations determine a maximum storage period

Received March 8, 2014; revised July 9, 2014; accepted July 10, 2014; published online September 11, 2014.

S.C. has nothing to disclose. A.-O.A. has nothing to disclose. I.-J.K. has nothing to disclose. P.H. has nothing to disclose. V.R. has nothing to disclose.

Supported by Fonds de Recherche du Québec - Santé, CHUM foundation.

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Fertility and Sterility® Vol. 102, No. 5, November 2014 0015-0282/\$36.00

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<http://dx.doi.org/10.1016/j.fertnstert.2014.07.1202>

for cryopreservation (4–9). For example, in Denmark this period is limited to 2 years (4); in France (5), Belgium (6), Australia (7), and Sweden (8) 5 years; and in the United Kingdom (9) 10 years. However, in North America (United States and Canada) there is no legal time limit. Although the American Society of Reproductive Medicine (ASRM) recently published guidelines related to embryos that have been “abandoned” for more than 5 years, clinics often feel unsure about the best way to proceed because the law does not provide clear guidance in this matter (10). In Quebec, although the law is explicit (“if patients fail to make contact for more than 5 years, a center for assisted procreation may conserve, donate, transfer or dispose of those persons’ gametes or embryos in a manner that has been determined to be ethically acceptable ...” [11]), some clinicians are still uncomfortable when facing decisions regarding disposition of abandoned embryos (12). From a clinical perspective, the time limit for conceiving a healthy baby from a frozen embryo is unknown. The “oldest” frozen embryo to produce a healthy baby was cryopreserved for almost 20 years (13).

Recently, researchers became interested in the ethical, social, legal, psychologic, and symbolic aspects of the decision-making process surrounding the cryopreservation of embryos and their future disposition. Several studies have been published exploring the factors influencing decision making, such as the conceptualization of the embryo, its perceived moral status, trust in the medical establishment, and the absence of appropriate options (7, 14–19). The literature about counseling and consent regarding cryopreservation is scant, and indicates that patients’ counseling needs are not met, which means that their consent may not be appropriately informed (19, 20).

Without a legal time limit for storage, cryopreserved embryos may remain viable after the death of one of the persons from whom they originated. This raises the possibility of posthumous assisted reproduction (PAR), which in this case would consist of using cryopreserved embryos to initiate a pregnancy after the death of one of the genetic parents, at the request of the surviving parent. In Quebec, the law requires that IVF users formally express their intentions regarding the future disposition of potential cryopreserved embryos, including specifying their intention regarding PAR, an option that is in fact included in the consent form provided by IVF clinics in Quebec.

PAR may be ethically acceptable if individuals seeking fertility treatment have specifically anticipated this eventuality and have left written consent for the use of their frozen embryos in this manner (21, 22). To this end, professional associations, such as the ASRM and the European Society of Human Reproduction and Embryology, have published guidelines regarding PAR, pointing out the importance of specific written consent as the only way to ensure that the rights and preferences of the deceased genetic parent are respected (21, 22).

Nakhuda et al. (23) studied the attitudes of 106 couples toward PAR (in the specific context of procurement of eggs or sperm after death) by asking them hypothetical questions about their preferences (23). Their results showed that 78% of respondents would agree to PAR, but 17% would not

(and the remainder had no opinion). The aim of the present study is to report on the actual choices of IVF users regarding the potential use of their surplus cryopreserved embryos for PAR. To our knowledge, no empirical study has been published to date of an inventory of completed consent forms regarding the use of embryos in the case of the death of one genetic parent, making this study the first of its kind. This study thus serves as a timely and valuable window into a more complete understanding of the intentions of IVF users regarding the use of their embryos for PAR. The results demonstrate the importance of developing counseling tools that would address the informational needs of user, to ensure that their consent for PAR is indeed informed.

MATERIALS AND METHODS

This study explored the choices made by 498 individuals seeking IVF regarding the disposition of their surplus embryos. The study was approved by the Institutional Review Board of the Hospital of the University of Montreal. The study reviewed a total of 498 signed consent forms, representing 249 heterosexual couples who were treated at the public IVF clinic of Montreal University Hospital Center (CHUM) in 2012–2013. During this period, a total of 312 IVF cycles were performed, however, 60 medical records were excluded from the study because they were incomplete, and two medical records were excluded because they belonged to single women and therefore did not address the possibility of leaving surplus embryos to a partner posthumously.

The review of the consent forms was performed by clinic staff in the context of quality improvement, and therefore written consent was not required. To protect patient confidentiality, all information gleaned from the consent forms was coded and kept in a secured location.

IVF users had received the consent form from the clinic’s nurses with an informational brochure designed to help them complete it at home. This informational brochure described the available options for the disposition of surplus cryopreserved embryos (i.e., improvement of the technique of assisted reproductive technologies [ART], use for training embryologists, or use in a research project). Regarding PAR, the informational brochure included information regarding the possibility of harvesting sperm or eggs after death, but not regarding PAR using cryopreserved embryos. IVF users did not receive any face-to-face counseling regarding the options offered in the consent form, but they did have an opportunity to ask questions regarding its completion.

Statistical analysis of the comparisons between men and women regarding their agreement to the various options was performed with the use of a chi-square test of association, and agreement within couples was examined with the use of phi coefficient. Significance level was set at .05, and all statistical analyses were done with the use of SAS 9.2 software.

RESULTS

All couples (100%) were informed by a physician and/or a nurse that most frequently several embryos are created during an IVF cycle and agreed to cryopreserve embryos that are not implanted. The mean age of women was 35.8 ± 4.8 and of

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