

A successful pregnancy from zygotes cryopreserved for >9 years: Case Report

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Summary

Purpose: To evaluate the longest interval that embryos can remain frozen and still result in a viable pregnancy after thaw and transfer. **Methods:** Case report. **Results:** A 42-year-old woman conceived and successfully completed the first trimester after transfer of frozen donated embryos from a 32-year-old woman whose eggs had been cryopreserved for over nine years. **Conclusions:** Patients can now be informed that there is anecdotal evidence that embryos can survive and result in successful pregnancies even after nine years of cryopreservation. This information may affect legislative decisions in requiring destruction of these stored embryos.

Key words: Cryopreservation; Embryos; Survival longevity.

Introduction

Although many countries have legislated embryo storage time-limits, very little research exists as to how long an embryo can be cryopreserved and still result in a viable pregnancy after thawing and transfer. To date, eight years is the longest that an embryo has been frozen and still resulted in a successful pregnancy [1]. The case presented here reports a viable pregnancy from an embryo that had been stored nine years.

Case Report

A 42-year-old woman and her male partner requested to have transfer of donated cryopreserved embryos for economic reasons. The cryopreserved embryos she selected had been frozen in August, 1991 and had just recently been donated to our program. Three of the five embryos had been frozen at the 2 pronuclear stage and two were frozen at the 4-cell stage. Three of the five embryos were transferred when 72 hours old and consisted of two 6-cell and one eight-cell embryo. The donor was age 31.8 when the embryos were frozen. The woman conceived and is now in her second trimester.

Discussion

No studies exist comparing the developmental and functional capacity of a zygote following long-term cryopreservation. In western Australia, legislation dictates that embryos may be frozen for no longer than three years, unless a special judicial request is initiated by the egg donor [2]. In the United Kingdom, embryo storage is permitted for a term of five years, which may then be extended to a maximum storage of ten years regardless of whether or not pregnancy had been achieved [3]. Oghoetuoma *et al.*, reported that in their center, 904 of 1,344 embryos were discarded following the initial five-year storage limit [3]. Multiple studies have been performed which seem to stress initial embryo quality over the deleterious effects of cryopreservation on biological tissues.

Transfer of cryopreserved/thawed embryos allows a woman to save money on expensive medications needed for controlled ovarian hyperstimulation and saves her the expense and risk of oocyte retrieval. But since some

minimal expense is involved in frozen embryo transfer, a woman would not want to do a frozen embryo transfer cycle if it would likely not be successful. She may inquire as to whether embryos in storage so long as nine years could still result in a successful pregnancy. This case report would thus provide at least one anecdotal report.

Many women want to keep their embryos frozen and not donate them initially because they are not sure if they want another child. Some of these women may feel strongly about destroying life even if the embryos are only 1-4 cells. A solution for her then would be to donate such embryos, but, if there is a time limit as to how long they may be cryopreserved and still be viable, this may present an uncomfortable dilemma to this woman since she might consider that by holding onto them beyond a certain point until she was sure that she no longer wanted another child she may have reduced any chance of these embryos surviving. Thus, she may feel guilty that she may have destroyed life.

This report would set a precedent for these women in that waiting nine years would still allow viability, and would not constitute an act which destroys life. Similarly, the knowledge that a successful pregnancy occurred with an embryo frozen for nine years would allow more acceptance of these embryos by women requesting the donor embryo program. We believe that many more women would be willing to donate their embryos after enough years have passed where they are certain they do not want them transferred back to themselves. Also information provided by this report may help to increase the number of years allowed for storage of frozen embryos before countries will demand mandatory destruction.

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