

Effect of multiple source vs single source of donor embryos on pregnancy and implantation rates per transfer

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Summary

Purpose: To evaluate whether using donated embryos from more than one source has a negative impact on pregnancy rates compared to a single source. **Methods:** Retrospective review of all donor embryo transfers that occurred in our IVF center over a 10-year period. Embryos were all from our own patient pool. **Results:** There were no differences in clinical or live delivered pregnancy rates. **Conclusions:** The willingness to choose multiple sources allows a marked reduction in the waiting time for donated embryos which are scarce. This also reduced the financial burden for couples who for religious or for ethical reasons cannot destroy the embryos and have to pay continuous embryo storage charges.

Key words: Donated embryos; Multiple source; De-selection.

Introduction

Donor embryo programs using embryos from other patients who no longer want them for themselves but do not want to destroy them have been very successful [1, 2]. However supplies are scarce especially with new FDA restrictions.

Sometimes there is only one or two frozen embryos left from a given patient and one cannot guarantee all surviving the thaw. Thus to improve the pregnancy rate per transfer and make it more economically feasible we allow women to transfer embryos from more than one source. The objective of the present study was to determine if transferring donated embryos from more than one source negatively or positively affects pregnancy rates.

Materials and Methods

The outcome of all donor embryo cycles over a 10-year time period were evaluated according to whether all the embryos transferred come from one source or two or more. They all came from our own patient population, i.e., embryos in storage that couples agreed to donate gratis to an anonymous couple. Frequently these were deselected embryos with fewer blastomeres and more fragmentation. They could have been day 3 embryos or 2 pronuclear embryos (there were no blastocysts donated).

The majority of embryos were frozen at our own institution using a simplified freezing protocol employing a single-step addition and removal of cryoprotectants [3]. Assisted embryo hatching was used prior to the transfer of day 3 embryos [4].

Results

There were 315 donor embryo transfers evaluated. The majority used embryos from a single source – 240 (76.1%). The clinical pregnancy rates per transfer (live fetus at 8 weeks) were as follows: single source – 44.8% (107/240), multiple source – 49.3% (37/75) ($p = 0.35$, chi-square analysis).

The live delivered pregnancy rate per transfer were as follows: single source – 36.7% (88/240), multiple source – 44.0% (33/75) ($p = 0.56$, chi-square analysis).

The implantation rates per embryo transfer were as follows: single source – 21.9% (160/732), multiple source – 16.9% (48/284) ($p = 0.09$, chi-square analysis).

Average number of embryos transferred were as follows: single source – 3.0, multiple source – 3.7.

Discussion

Live delivered pregnancy rates using frozen thawed donated de-selected embryos are quite adequate whether the source is from a single or multiple source. Some researchers suggest that the allogeneic stimulus of trophoblasts could induce an inflammatory reaction that would limit the depth of trophoblast invasion but this is modified to some extent by exposure to and development of immune tolerance to paternal antigens by exposure to paternal sperm [5-7]. Obviously in the case of donated embryos exposure to paternal sperm is not possible but there does not seem to be adverse consequences. An even greater allogeneic stimulus by exposure to embryos from different sources does not seem to cause any adverse consequence on the achievement of a live pregnancy as evidenced by these data.

The majority (about $\frac{3}{4}$) of couples choose embryos from a single source. However a substantial minority will choose embryos from a multiple source. Choosing

donated embryos from a multiple source not only allows some women to have a baby when availability is low, but allows satisfaction to couples who no longer want children but feel uncomfortable not allowing the created life to have the opportunity for birth. Furthermore allowing the choice of embryos from a multiple source will allow some couples to finally eliminate the financial burden of having to pay for storage of embryos they no longer want yet for moral or ethical reasons cannot destroy them.

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