

Comparison of pregnancy outcome following frozen embryo transfer (ET) in a gestational carrier program according to source of the oocytes

J.H. Check, B. Katsoff, D. Brasile, C. Wilson, D. Summers-Chase

*The University of Medicine and Dentistry of New Jersey, Robert Wood Johnson Medical School at Camden,
Cooper Hospital/University Medical Center, Department of Obstetrics and Gynecology,
Division of Reproductive Endocrinology & Infertility, Camden, NJ (USA)*

Summary

Purpose To determine any differences in pregnancy rates if frozen-thawed embryos are transferred to a gestational carrier if the source of oocytes came from infertile women trying to conceive vs a paid egg donor. **Methods:** Gestational carriers were used because of uterine problems or health issues. If there was adequate ovarian egg reserve, controlled ovarian hyperstimulation followed by oocyte retrieval was performed on the infertile woman. Otherwise an egg donor was used. **Results:** No differences in clinical and ongoing delivered pregnancy rates were found but a trend for higher implantation rates in the paid donors was evident. **Conclusions:** The trend for higher implantation rates when a paid donor was the source of oocytes may be age-related (35.9 for infertile women vs 29.5 for paid donors). The pregnancy results with frozen embryos were sufficient to allow women to proceed with oocyte retrieval if time is of the essence even if a gestational carrier has not as yet been found.

Key words: Gestational carrier; Donor oocytes; Frozen embryos.

Introduction

The most common used source for donated oocytes for recipients is paid anonymous donors. Frequently these can be shared between two recipients [1]. Another source, however, is infertile women sharing half of the retrieved oocytes in exchange for financial considerations. Pregnancy and implantation rates were found to be similar whether the source of oocytes were from infertile or paid donors [2].

Another study found no difference in pregnancy rates in infertile donors trying to conceive themselves following fresh embryo transfer or frozen embryo transfer but did find an improved pregnancy and implantation rate if fresh vs frozen-thawed embryos were transferred to recipients [3]. One explanation for these findings was that the controlled ovarian stimulation used for donors decreased implantation potential in some women taking away the advantage of fresh embryo transfer [3].

The method of embryo freezing in the aforementioned study used a simplified freezing protocol avoiding the programmable freezer (which could be considered the main reason for low success with frozen-thawed embryos in many IVF centers) with a one-step removal of cryoprotectants [4].

The frozen-thawed embryos, even with this simplified cryopreservation technique, may not be as hearty as fresh embryos. The present study evaluated whether the frozen embryos from infertile donors may be less hearty than frozen embryos from paid and usually younger donors by using a different data set, i.e., only frozen-thawed donor oocyte-derived embryos transferred to gestational carriers.

Materials and Methods

A retrospective cohort analysis of all frozen embryo transfers into gestational carriers over seven years.

All embryos were frozen according to a simplified freezing protocol with a one-step removal of the cryoprotectant 1,2 propanediol upon thawing [4]. All embryo transfers were on day 3 and were preceded by assisted embryo hatching [5].

Some embryos were frozen at the 2 pronuclear (2PN) stage either because fresh embryo transfer was deferred for various reasons or because only a limited number of the fertilized eggs were allowed to proceed to cleavage embryos stage. The general policy at Cooper Center for IVF is to only allow twice as many embryos to proceed to cleavage stage as intended to transfer and to freeze the rest at the 2PN stage. Some transferred embryos may have been frozen and thawed twice (but represented only a small minority) [6].

The gestational carriers were treated with a graduated regimen of oral and vaginal estradiol beginning day 2 and with progesterone vaginal suppositories (400 mg) started on day 15. Embryo transfers were with day 3 embryos transferred on the fourth day of progesterone.

Results

There were no significant differences in the clinical or ongoing/delivered pregnancy rates (Table 1).

Although there was not a significant difference in implantation rates there was a trend for higher implantation rates in the gestational carriers receiving eggs from paid donors ($p = .08$) (Table 1). The trend for higher implantation rates with paid donors may be related to the higher age of the infertile women used for oocyte donation (35.9) vs the ones using donor eggs from paid donors (29.5).

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Table 1. — Pregnancy and implantation rates following frozen embryo transfer according to whether the source of eggs was from infertile women vs paid donors.

	Source of Oocytes	
	Infertile Donors	Paid Donors
# of transfers	32	42
Clinical pregnancies	13	19
% clinical pregnancy/transfer	40.6	45.2
Ongoing/delivered pregnancies	12	18
% ongoing/delivered/transfer	37.5	42.9
# embryos transferred	106	126
# embryos implanted	19	35
Implantation rate (%)	17.9	27.8
Avg. # embryos transferred	3.3	3.0
Avg. age	35.9	29.5

Discussion

Gestational carriers are used for many reasons including: prior hysterectomy, congenital uterine abnormality, multiple miscarriages, systemic diseases, or unexplained infertility.

Sometimes it is necessary to retrieve the oocytes before a gestational carrier is found, e.g., prior to surgery where the uterus would be resected or before chemotherapy that may damage the oocytes. Nine of 32 (28.1%) frozen embryo transfers into gestational carriers using the infertile woman's oocytes were first transfers, i.e., no preceding fresh transfers, four were because of impending medical treatment, two were for insurance reasons (coverage ending shortly), and three were from canceling fresh embryo transfer because of a homogeneous hyperechogenic pattern of the gestational carrier's endometrium in the late proliferative phase [7]. Interestingly there were similar numbers of first frozen ETs using paid donor oocytes (26.1%, 11 of 42).

The pregnancy rates following frozen embryo transfer into gestational carriers seem sufficient to continue the policy of using the remaining frozen embryos for transfer rather than going through another oocyte retrieval in the infertile woman or paid oocyte donor. Sometimes because gestational carriers are at a premium, some couples are concerned that they may lose them to another couple if a pregnancy does not happen in a given time

period so they would rather transfer the frozen embryo right away than wait for another retrieval since it is not preferred to do COH and oocyte retrieval in consecutive cycles.

The frozen ET pregnancy rates from infertile or paid donors seem sufficient enough such that if insurance reasons prompt oocyte retrieval from egg donors now and cryopreservation of embryos because a gestational carrier has not as yet been found, the couple should not hesitate for fear of poor pregnancy rates. Nevertheless, if coordination could be achieved between oocyte donor and gestational carrier, based on previous data the live delivered pregnancy rate may be higher with fresh embryo transfer [3].

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Address reprint requests to:
J.H. CHECK, M.D., Ph.D.
7447 Old York Road
Melrose Park, PA 19027 (USA)
e-mail: laurie@ccivf.com