

Laser assisted hatching is beneficial for cases that use vitrified oocytes from egg donor cryo banks

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		<input type="checkbox"/> Protocol
Registration date 31/01/2017	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
Last Edited 31/01/2017	Condition category Pregnancy and Childbirth	<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

In vitro fertilization (IVF) is a technique that helps people who have trouble getting pregnant have a baby. This involves an egg being taken from a women's ovary and fertilized with sperm in a laboratory. The fertilized egg (embryo) is then put into a women's uterus to grow (transferred). If there are problems with a woman's eggs, she can use donated eggs from a healthy woman. Eggs can be stored and saved through the process of rapidly freezing them (vitrification). The success rates of producing a pregnancy from a donated egg can vary, as the eggs have to defrost. This process can cause for the embryo to harden making it unable to hatch (break out of its outer layer that surrounds it) and implant itself into the uterus. A new procedure that assists the hatching process has shown positive, but mixed, results in assisting implantation in the uterus (assisted hatching). This process uses lasers to create an opening in the outer layer allowing the embryo to implant more easily. This study aims to evaluate the techniques used to assist with the embryo hatching from donated vitrified eggs.

Who can participate?

Women aged up to 50 years who are undergoing their first IVF cycle.

What does the study involve?

All embryos used in this study are made from vitrified eggs that are thawed, fertilized with sperm and cultured (developed) in the laboratory. Eggs used in this study are from healthy women aged up to 32 years old who have donated their eggs. Egg transfer is done on the fifth day after fertilization, and is transferred to the participant's uterus through the use of a thin, flexible tube called a catheter. Participants are allocated to one of two groups. Those in the first group are transferred embryos that have assistance hatching. This involves the use of laser pulses two hours before being transferred to create a tiny hole in the outer layer of the embryo. Those in the second group are transferred embryos without assisted hatching. Participants are followed up to see if they are pregnant at 14 days after transfer, 8-10 weeks and 12 weeks after gestation.

What are the possible benefits and risks of participating?

Participants may benefit from higher pregnancy rates as a result of taking part in the study. Risks of participating include the possibility that the eggs will not survive after warming and discomfort during the transfer process.

Where is the study run from?

Iakentro Advanced Medical Center (Greece)

When is the study starting and how long is it expected to run for?

January 2014 to June 2017

Who is funding the study?

Iakentro Advanced Medical Center (Greece)

Who is the main contact?

Mr Achilleas Papatheodorou

Contact information

Type(s)

Scientific

Contact name

Dr Achilleas Papatheodorou

ORCID ID

<https://orcid.org/0000-0001-8662-4903>

Contact details

Iakentro Advanced Medical Center

Ag. Vasileiou 4

Harilaou

Thessaloniki

Greece

54250

+306944964983

achilleas@iakentro.gr

Additional identifiers

Protocol serial number

N/A

Study information

Scientific Title

Laser Assisted Hatching before embryo transfer improves the clinical outcome in Vitrified Oocyte Donation cycles: A randomized controlled study

Acronym

LAH-OOVOD

Study objectives

The performance of laser assisted hatching prior to transfer in embryos derived from aseptically vitrified and warmed oocytes in an oocyte donation program is beneficial.

Ethics approval required

Old ethics approval format

Ethics approval(s)

IAKENTRO Institutional Review Board (IRB), 11/1/2015, ref: IRB_15/2015

Study design

Single-centre randomized controlled trial

Primary study design

Interventional

Study type(s)

Other

Health condition(s) or problem(s) studied

Oocyte donation and vitrification

Interventions

Participants are allocated to one of two groups. All embryos are made using vitrified oocytes from the IAKENTRO egg cryobank. All oocytes are vitrified and warmed using a closed system vitrification. After warming, oocytes are fertilized using intra cytoplasmic sperm injection (ICSI) technique. Oocytes are assessed the next day for fertilization. The resulting embryos are cultured to day 5 stage, when embryos are expected to form a blastocyst. After evaluation on day five, two good quality blastocysts are selected for embryo transfer through a specific catheter.

Group 1 (Intervention): Participants are transferred embryos hatched with assistance. This involves the use of laser pulses two hours before transfer. In these embryos, a opening to the zona (outer membrane) is made. The size of the opening is around 1/6 of the perimeter of the zona. The opening is generated with laser pulses for duration of 400µsec.

Group 2 (Control): Those in the second group are transferred embryos without assisted hatching and receive the standard level of care.

Participants are followed up 14 days after embryo transfer, 8-10 weeks after gestation and 12 weeks after gestation to see if they are pregnant.

Intervention Type

Other

Primary outcome(s)

1. Pregnancy rate per cycle is measured by the rise of serum b-HCG concentrations through a blood test 14 days after embryo transfer
2. Clinical pregnancy rate per cycle, is assessed by the appearance of a gestational sac and a fetal

heartbeat at 8–10 weeks of gestation

3. Ongoing pregnancy rate per cycle is assessed by the number of pregnancies with fetuses displaying heart activity beyond 12 weeks of gestation per cycle

4. Live birth rate per cycle by contacting the couple the estimated date of birth. The estimated due date is being calculated by the software we use in our clinic with patient information. A notification for calling the couple is being generated from the system automatically.

Key secondary outcome(s)

1. Implantation rate is measured by dividing the number of the gestational sacs that are being measured on 8th to 10th week of pregnancy, divided by the number of transferred embryos

2. Twin pregnancy rate is measured by dividing the number of the cases with 2 fetuses with the number of the cases with pregnancy. This information is being monitoring after 12 weeks of gestation.

Completion date

15/06/2017

Eligibility

Key inclusion criteria

Oocyte donor inclusion criteria:

1. Up to 32 years old
2. Body mass index of less than 30 kg/m²
3. Regular menstrual cycles of 25–35 days
4. Two normal ovaries based on transvaginal scan findings
5. No polycystic ovary syndrome
6. No known endometriosis
7. No gynecological or medical disorders
8. Agreed to donate their oocytes for treatment anonymously and altruistically
9. Known fertility and good ovarian response
10. Blood sample given for karyotype and screening for previous viral infection (hepatitis B and C, human immunodeficiency virus, syphilis), thalassemia and cystic fibrosis
11. A single stimulation cycle was included for each donor

Recipient inclusion criteria:

1. Up to 50 years old
2. No history of endometriosis
3. First oocyte donation cycle
4. Blood screening for karyotype and previous viral infections (hepatitis B and C, human immunodeficiency virus, syphilis,) thalassemia and cystic fibrosis, for both the recipient and their partners
5. Screened for hysterosalpingogram
6. Diagnostic hysteroscopy to eliminate cases presenting hydrosalpinx or intrauterine pathology
7. Receive a mock transfer in a cycle previous to their donation cycle and if difficulty was encountered a cervical dilatation was performed
8. The recipient's partner has no severe male infertility indication

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Sex

Female

Key exclusion criteria

Vitrified egg donation exclusion criteria:

1. When warmed oocytes are less than 9
2. When survived oocytes after warming are less than 6

Recipient exclusion criteria:

1. More than 2 previous failed oocyte donation cycles
2. Severe male factor infertility in partner

Date of first enrolment

01/02/2015

Date of final enrolment

01/06/2017

Locations

Countries of recruitment

Greece

Study participating centre

Iakentro Advanced Medical Center

Ag. Vasileiou 4

Harilaou

Thessaloniki

Thessaloniki

Greece

54250

Sponsor information

Organisation

IAKENTRO Advanced Medical Center

ROR

<https://ror.org/05mnrce88>

Funder(s)

Funder type

Hospital/treatment centre

Funder Name

IAKENTRO Advanced Medical Center

Results and Publications

Individual participant data (IPD) sharing plan

The data of the participants are considered as medical records and include sensitive information which is held electronically in PC software for IVF clinic patients. These data are encrypted and people with higher access classification (gynecologists, embryologists, nurses) can see. Thus, they are not expected to be available to third party organisms and people.

IPD sharing plan summary

Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes