ISRCTN21836222 https://doi.org/10.1186/ISRCTN21836222

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

Submission date
30/01/2017

Recruitment status
No longer recruiting

Registration date
31/01/2017

Overall study status
Completed

Last Edited
31/01/2017

Condition category
Pregnancy and Childbirth

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] 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
http://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

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
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

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Other

Participant information sheet
Not available in web format, please use the contact details below to request a patient information sheet

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 arevitrified 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 measure
1. Pregnancy rate per cycle is measured bythe 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.

Secondary outcome measures
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.

Overall study start date
17/01/2014

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

Age group
Adult

Sex
Female

Target number of participants
182

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

Sponsor details
Iakentro Advanced Medical Center
Ag. Vasileiou 4
Harilaou
Thessaloniki
Greece
54250
+30 69 449 64983
achilleas@iakentro.gr

Sponsor type
Hospital/treatment centre

Website
www.iakentro.com

ROR
https://ror.org/05mnrce88

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
IAKENTRO Advanced Medical Center

Results and Publications

Publication and dissemination plan
Planned publication in a high-impact peer reviewed journal.

Intention to publish date
01/01/2018

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