

CHAUNIVERSITY FERTILITY CENTER DAEGU





To Our Valued Clients Visiting Daegu CHA Fertility Center

The medical staff and employees at Daegu CHA Fertility Center fully understand the great hope and the challenging journey you have undergone to come to South Korea. We promise to work together with dedication and communicate with warmth to create miraculous moments where your dreams of achieving pregnancy come true through the best fertility care and success rates. With Daegu CHA Fertility Center, the hope of couples becomes a reality.

CHA Global Medical Network



7 COUNTRIES | 96 MEDICAL CENTERS | 1,800 DOCTORS | 14,000 MEMBERS

I. Hospital Introduction

1. Message from the Director

CHA Hospital, with over 64 years of experience in infertility treatment, boasts the largest facility in Daegu and the Southeast region in Republic of Korea(south), with top-level medical and research staff, and world-class aseptic culture and freezing systems, resulting in a very high pregnancy success rate. Daegu CHA Fertility Center offers cutting-edge infertility treatment technologies, including pre-implantation genetic testing, immune therapy for patients with recurrent miscarriages and implantation failures, and an embryo development tracking system that monitors real-time embryo development. We provide optimized treatment methods tailored to each individual.





Director of Daegu CHA Fertility Center

2. The Uniqueness of Daegu CHA Fertility Center

- ① Experience with Foreign Patients: Attracting the highest number of foreign infertility patients since 2010, with experienced medical staff.
- ② High Pregnancy Success Rate.
- ③ A center specializing in preimplantation genetic testing with over30 years of experience and advanced interpretation capabilities
- ⑤ Unique Infertility Expertise: Exceptional cultivation techniques by outstanding researchers.
- Safe Embryo Management: Using alarm monitoring systems, embryo development tracking systems, and the RI Witness System.
- ② Secure Storage: Safe preservation of embryos, eggs, and sperm with the latest bio-tanks and advanced freezing technology.
- © Convenient Location: Centrally located in Daegu, with easy access to Daegu Subway, SRT, KTX, and Daegu International Airport.
- Tourism Hub: Daegu serves as a starting point for city tours and is well-connected to other tourist destinations like Gyeongju, Andong, and Busan.



II. Hospital Information Guide

1. For First-Time Visitors

1) Visiting Period

You can visit us regardless of your menstrual cycle.

However, it's best to come on the 2nd or 3rd day of your period!

Please visit us on the second or third day of your menstruation for an immediate fertility test.

2) Be sure to check !

(1) If you are a couple planning to conceive, the earlier you start, the higher your chances of success.

If you have been married and engaging in regular sexual activity without any contraception but have not conceived after a year, don't ignore it or worry in silence. Visit a hospital as soon as possible. Inducing pregnancy at a younger age tends to have a higher success rate.

(2) It is important to fully trust your primary doctor and diligently follow the guidelines they provide.

Comparing your infertility treatment with others is unnecessary. The most important thing is to understand your own menstrual cycle and characteristics accurately and to faithfully follow your doctor's care.

(3) Infertility testing should be done by both partners together.

Pregnancy is not just one person's responsibility. When both partners come together and make a joint effort, their combined abilities increase the chances of conception. Therefore, both partners should undergo infertility testing together.

(4) Please fill out the infertility questionnaire and bring it with you before your hospital visit.

At the hospital, you will be asked many questions related to pregnancy by your primary doctor. During your first visit, you may feel overwhelmed and have difficulty expressing yourself. Therefore, reviewing the questionnaire in advance will help with your consultation.

(5) Please bring your past medical records and test results.

Make sure to bring past medical records, test results, and hysterosalpingography (HSG) images with you.

If you or your baby have chromosomal abnormalities, please bring your chromosomal results.

If there is a genetic disorder in your family, be sure to bring your own and your family's genetic test results.

2. Location

4th Floor, 2095 Dalgubeol-daero, Jung-gu, Daegu

Subway

Banwoldang Station, Daegu Metro Line 1 and Line 2, Exit 14, 4th floor of Samsung Life Building

3. Required Documents

1) Identification Card

Identification Card Acceptance Criteria

Passport

Domestic government-issued ID

Alien Registration Card

Permanent Resident Card

Domestic Residence Report Certificate

Driver's License

(Domestic Driver's License)

Note: Foreign driver's licenses are not accepted.

2) Marriage Certificate and Notarizaton

The patient must be legally married. Please bring a copy of your Marriage Certificate when you visit.

Translate the Certificate of Marriage' into Korean and then go to a Korean lawyer's office to have it notarized.



3) Medical records and test results

- (1) Past medical records, test results, and HSG (hysterosalpingography) images
- (2) Chromosome test results, etc.

4. SNS Consultation

After installing 카카오톡 Kakao Talk from the Google Play Store, please contact us through the '대구차여성의원' Kakao Channel with any questions, and we will provide a response.

Consultation hours

Weekdays

09:00AM-05:30PM

Saturday

09:00AM-12:30PM

5. Hospital Operating Hours

Reception Hours —

 $-\!\!-\!\!$ Doctor's Consultation Hours $-\!\!\!-\!\!\!-\!\!\!$

Weekdays

08:30AM-05:30PM

Saturday

08:30AM-12:30PM

Weekdays

09:00AM-06:00PM

Saturday

09:00AM-13:00PM

III. Appointment

1) Infertility Center



M.D Professor In-Su Kang

Specializations:

Recurrent Implantation Failure, Recurrent Miscarriage, Preimplantation Genetic Testing (PGT-A for chromosomal abnormalities, PGT-SR for structural rearrangements, PGT-M for genetic disorders), Care for International Patients

Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09:00AM~01:00PM	0		0		0	
02:00PM~06:00PM	0		0			



M.D Professor Kyung-Mi Koong

Specializations:

Infertility, Ovarian Dysfunction, Recurrent Implantation Failure, Recurrent Miscarriage, Preimplantation Genetic Diagnosis

	Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	09:00AM~01:00PM	0		0		0	
$/\!\!/$	02:00PM~06:00PM	0		0		0	

1) Infertility Center



M.D Professor Su-Yeon Im

Specializations: Infertility, In vitro Fertilization (IVF), Recurrent Miscarriage, Hysteroscopic Surgery

Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09:00AM~01:00PM	0	0	0	0	0	0
02:00PM~06:00PM	0			0		



M.D Professor Ae-Ra Han

Specializations:

Recurrent Miscarriage, In vitro Fertilization (IVF), Fertility Preservation, Egg/Embryo Cryopreservation

Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09:00AM~01:00PM	0		0	0	0	0
02:00PM~06:00PM		0			0	

1) Infertility Center



M.D Professor Lee Kwang

Specialties:

In Vitro Fertilization (IVF), Preimplantation Genetic Testing (PGT), Advanced Maternal Age Pregnancy, Diminished Ovarian Reserve, Recurrent Implantation Failure, Recurrent Miscarriage, Oocyte Cryopreservation (Egg Freezing), Male Infertility

Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09:00AM~01:00PM		0	0	0	0	0
02:00PM~06:00PM	0	0		0		



M.D Professor Soo-Yeon Lee

Specialties:

Fertility Preservation, Fertility Check-Up, Hysteroscopic Surgery, In Vitro Fertilization (IVF) Procedure

Consultation Schedule	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09:00AM~01:00PM		0		0	0	0
02:00PM~06:00PM	0	0	0		0	

2) Department of Anesthesiology and Pain Medicine



M.D Professor Jung-Eun Kim

Specialties:

Obstetric Anesthesia, Gynecological Anesthesia, Intravenous Anesthesia, Outpatient Anesthesia, Pain Management



M.D Professor Youngran Kang

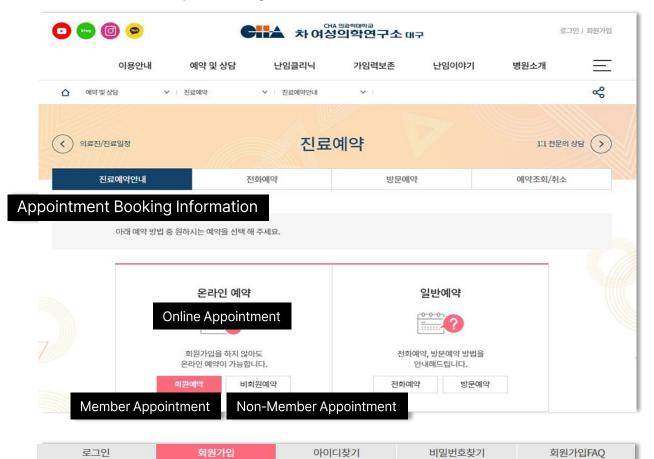
Specialization:

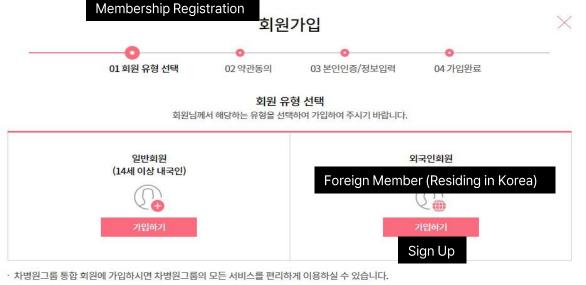
Intravenous Anesthesia, Outpatient Anesthesia, Pain Management



2. Medical Appointment

https://daegu.chamc.co.kr/default.cha





- · 회원가입을 위해서는 본인인증(아이핀, 휴대폰)이 필요합니다. ※회원가입 시 모든 유형 필수
- · 본인인증이 되지 않는 경우, 서울신용평가정보㈜에서 인증정보를 확인하시기 바랍니다.

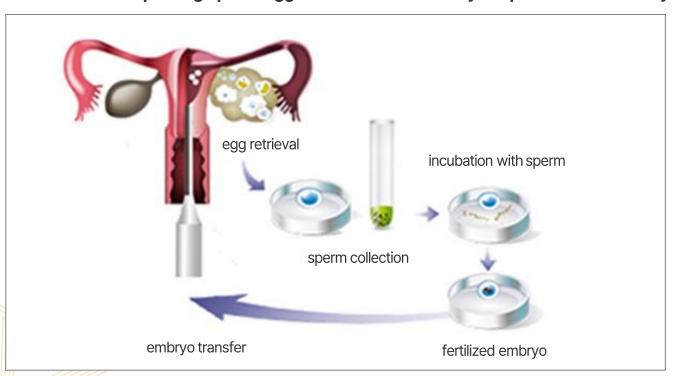
IV. Infertility Clinic

1. In Vitro Fertilization (IVF) Procedure

1) Clinic Introduction



IVF Clinic for Improving Sperm/Egg Fertilization and Embryo Implantation Efficiency



In Vitro Fertilization Procedure

Medically, it is referred to as "In Vitro Fertilization-Embryo Transfer" (IVF-ET).

Instead of the natural fertilization process where sperm and egg meet in the woman's fallopian tubes, this procedure involves artificially retrieving mature eggs from the woman and sperm from the man, fertilizing them in a culture dish, and then incubating the fertilized eggs for 3–5 days. The embryos are then transferred to the woman's uterine lining to induce pregnancy.

IVF can be used when both of a woman's fallopian tubes are blocked, if both tubes have been removed, if a tubal surgery was performed but failed, or if there are issues with sperm count or motility in men. It is also an option for severe endometriosis, ovarian dysfunction, or other unexplained infertility issues.

Strengths of Cha Hospital's In Vitro Fertilization Procedure



2) Procedure Process



Controlled ovarian hyperstimulation

Oocyte(egg) retrieval

Sperm collection

In vitro fertilization and embryo culture Embryo transfer

Confirmation and managing pregnancy

(1) Ovarian Stimulation

A. Natural Ovulation Method

This method involves retrieving mature eggs according to the natural cycle. However, natural ovulation occurs only once a month, and it is difficult to precisely predict the ovulation day, which means there is a higher chance of not obtaining mature eggs.

B. Artificial Ovulation Stimulation

By artificially stimulating ovarian hyperstimulation, it is possible to retrieve multiple eggs at once, rather than just one as in a natural cycle, which can increase the chances of pregnancy. Research over several decades has shown that obtaining multiple mature eggs significantly improves IVF success rates, so most IVF procedures now use ovulation stimulants.

Among the various methods of using ovulation stimulants in IVF, the choice of method is primarily based on factors such as the patient's age, ovarian function, and previous ovulation stimulation results.

(2) Egg Retrieval

If the timing of egg retrieval is too early, the eggs may be immature, and if it is too late, the eggs might have ovulated or become overripe, reducing the success rate. Therefore, determining the timing of egg retrieval is very important. Generally, when the follicles have matured to 18mm or more, human chorionic gonadotropin (HCG) is administered in the evening of the same day, and egg retrieval is performed about 35 hours later. After administering a sedative through an intravenous injection, the eggs are retrieved using a needle guided by transvaginal ultrasound while monitoring the ovaries through the vagina.

The procedure takes about 20-30 minutes. After waking from anesthesia and once the patient's condition is stable, they can go home. Since the eggs are retrieved from the ovaries before ovulation, they need to undergo a maturation process before fertilization. They are matured in a culture medium that simulates the conditions of the recipient's body environment for a certain period of time.

(3) Sperm Collection

When the timing of egg retrieval is determined, the husband should begin abstaining from intercourse 2-3 days before ovulation. On the day of egg retrieval, sperm is also collected. The collected semen is washed several times to remove impurities and inflammatory cells, and a suspension of motile sperm is prepared. The reason for washing the sperm in this way is to select high-quality sperm with good fertilization ability.

(4) In Vitro Fertilization and Culture

The eggs and sperm are placed in a culture system that simulates the environment of the fallopian tubes, where fertilization occurs. If the sperm quality is good, approximately 50,000 to 100,000 sperm are added to the culture dish containing the eggs for fertilization to take place. However, if the sperm quality (motility, morphology, or count) is poor, Intracytoplasmic Sperm Injection (ICSI) is performed. ICSI involves directly injecting specially treated sperm into the cytoplasm of the egg.



(5) Embryo Transfer

- ① The procedure is performed without anesthesia, with the patient only taking a mild sedative.
- ② The embryo is placed in a thin catheter, which is then inserted into the uterus through the cervix.
- 3 The procedure takes approximately 2-3 minutes.

(6) Confirmation and Maintenance of Pregnancy

11 days after the embryo transfer (For frozen embryo thawing and transfer, the blood test is done on the 9th day after the transfer), a blood test is conducted to confirm pregnancy. If pregnancy is confirmed through the blood test, additional blood tests are performed 2-3 times at 7 day intervals to ensure that hormone levels are increasing. Once pregnancy is confirmed, an ultrasound is conducted 1-2 weeks later to check for the presence of a gestational sac.

From the day of egg retrieval, luteal hormone is administered to stabilize the uterine lining. The luteal hormone preparations include intramuscular injections, vaginal suppositories, and oral medications. Even if pregnancy is confirmed, luteal hormone supplementation is continued until around 8-9 weeks to ensure a safe pregnancy.

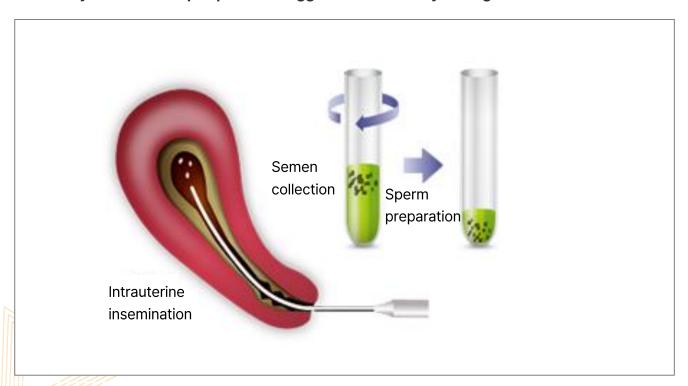


2. INTRAUTERINE INSEMINATION

1) Clinic Introduction



A fertility clinic that helps sperm and egg meet more easily through artificial insemination



IUI: INTRAUTERINE INSEMINATION

It is the first stage of assisted reproductive technology, where semen is collected from the husband during the woman's ovulation period, specially processed to select high-quality sperm, and then directly injected into the woman's uterus through a thin tube to facilitate natural fertilization. Artificial insemination is a simple procedure that can be performed in a doctor's office. Compared to in vitro fertilization (IVF), it is more convenient and less expensive.

However, since fertilization occurs in the fallopian tubes just like in natural conception, at least one fallopian tube must be in normal condition. It can be performed when the sperm is weak or has low motility, and it can also be done in cases of unexplained infertility.

1) IUI Process

(1) Methods of IUI

There are two main methods: using the natural cycle and ovarian stimulation. The method using the natural cycle involves timing the procedure according to the woman's ovulation cycle if her menstrual cycle is regular and she does not desire a multiple pregnancy.

The method using ovarian stimulation involves taking ovulation-inducing medication or receiving ovulation-stimulating injections to produce multiple eggs. This approach may increase the chances of pregnancy due to the production of multiple eggs, but it also raises the likelihood of a multiple pregnancy.

Both methods typically involve monitoring follicle growth (number and size) in the ovaries through ultrasound to predict the ovulation day, which usually requires several ultrasound examinations. If necessary, ovulation-stimulating injections may be administered.



(2) IUI Procedure

Once the ovulation day is determined through an ultrasound examination, on the day of ovulation, semen is collected from the husband through masturbation, processed to select only healthy, motile sperm, and then concentrated into a small volume. This concentrated sperm is then directly injected into the woman's uterus through a thin tube.

This procedure is very simple and painless. Afterward, the patient typically lies down for about 10-15 minutes for rest before leaving. If artificial insemination is performed with ovarian stimulation, additional treatments such as progesterone or hCG injections may be administered based on the patient's condition to aid in pregnancy.

(3) Precautions Before and After Artificial Insemination

The husband should avoid excessive drinking and hot saunas. On the day of the procedure, it is advisable to refrain from intense exercise or strenuous activities, but normal daily activities can resume immediately. After the procedure, there is no need to restrict bathing or sexual intercourse.

(4) The pregnancy rate for IUI

The pregnancy rate for IUI can vary depending on the woman's age, the cause of infertility, and the duration of infertility. Generally, the success rate per procedure is reported to be around 10-15%, but the cumulative pregnancy rate increases with repeated procedures. In the case of ovulation induction artificial insemination, the success rate can be expected to be around 20%.

(5) Problems related to IUI

Problems related to IUI Compared to natural conception, there is no increased risk of miscarriage, ectopic pregnancy, or birth defects. However, in cases where ovulation induction is performed (particularly with the use of ovulation induction injections), the incidence of multiple pregnancies can rise to about 20%, and there is an increased risk of ovarian hyperstimulation syndrome, where the ovaries become enlarged.





3. Genetics/Preimplantation Genetic Diagnosis



Genetics/Preimplantation Genetic Diagnosis clinic that analyzes embryo chromosomes to diagnose the presence of genetic disorder.



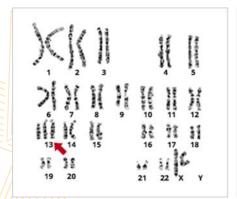
1) Preimplantation Genetic Test, PGT

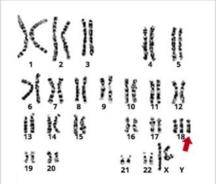
Chromosomal abnormalities in embryos increase rapidly with the mother's age. If there are chromosomal abnormalities in the embryo, the success rate of pregnancy decreases and the risk of miscarriage increases. Preimplantation Genetic Testing (PGT) is a procedure performed not only if the couple has specific chromosomal abnormalities but also when there is a high risk of chromosomal abnormalities in the embryo, which could lead to pregnancy failure or recurrent miscarriage.

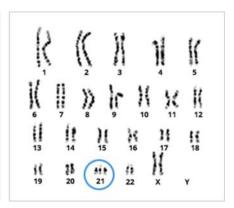
In the past, to diagnose chromosomal abnormalities in embryos and implant only normal embryos, techniques such as Fluorescence In Situ Hybridization (FISH) were used to diagnose only specific chromosomes. However, recently, Next Generation Sequencing (NGS), which allows diagnosis of all 46 chromosomes, is more commonly used. Preimplantation Genetic Screening improves implantation rates and pregnancy rates during in vitro fertilization procedures, reduces miscarriage rates, and increases the likelihood of giving birth to a healthy baby.

2) Indications for Preimplantation Genetic Testing (PGT)

- When there is suspicion of numerical chromosomal abnormalities, or if there
 has been a previous pregnancy with a chromosomal abnormality in the fetus
- Advanced maternal age
- Recurrent spontaneous miscarriage
- · Repeated implantation failure
- Men with oligospermia
- 3) Numerical chromosomal abnormalities (such as Down syndrome, Edwards syndrome, Patau syndrome, etc.







Human chromosomes are expressed as 1 set (n) of 2 paired cells, with a total of 46 chromosomes, comprising 23 sets of chromosomes (2n=46). Numerical abnormalities of 2n chromosomes refer to deviations from the normal total of 46 chromosomes and are broadly classified into polyploidy and other categories.

(1) Polyploidy

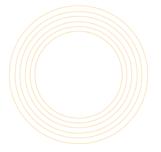
Abnormalities in chromosome sets, such as triploidy (3n=69) and tetraploidy (4n=92), are typical examples and are most commonly found in fetuses miscarried during early pregnancy.

(2) aneuploidy

Having one extra chromosome (trisomy, 2n+1=47) or one fewer chromosome (monosomy, 2n-1=45) is characteristic of aneuploidy. Most autosomal aneuploidies, like polyploidies, do not develop normally and result in either failure of pregnancy or miscarriage early in pregnancy.

However, some trisomies, such as Down syndrome (trisomy 21), Patau syndrome (trisomy 13), and Edwards syndrome (trisomy 18), can result in a viable pregnancy and birth, although they are associated with severe congenital abnormalities or intellectual disabilities. Except for Down syndrome, these conditions often lead to death shortly after birth.

Monosomies of autosomes typically do not result in a viable pregnancy and lead to early miscarriage. In contrast, most sex chromosome aneuploidies (such as Turner syndrome, 45,X; Klinefelter syndrome, 47,XXY; 47,XXX; 47,XYY) usually result in a viable pregnancy and birth. The symptoms are often mild or almost absent compared to autosomal aneuploidies, but these conditions can cause abnormalities in gamete formation, potentially leading to infertility or subfertility.

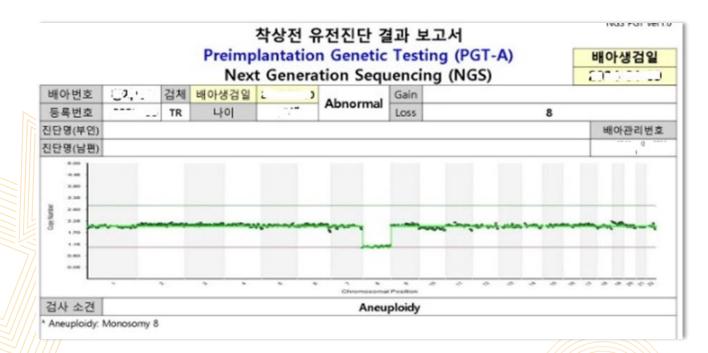


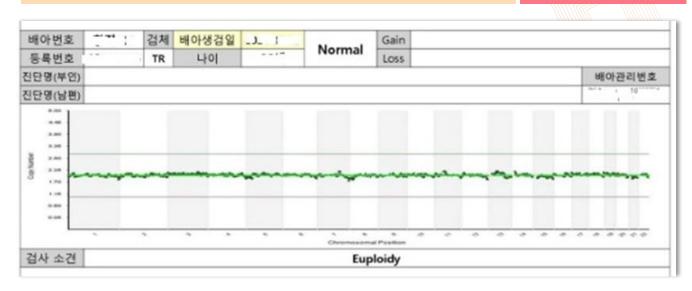
4) Safety of the fetus after Preimplantation Genetic Testing

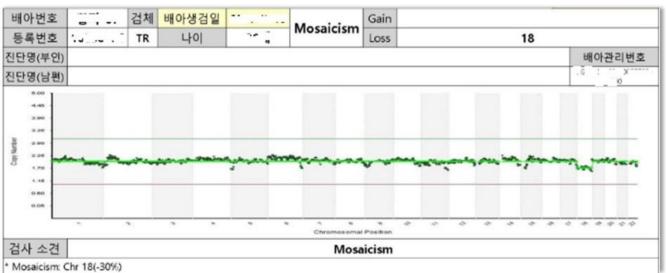
The incidence of congenital abnormalities in babies born after preimplantation genetic testing is reported to be similar to that in babies conceived through standard in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI), and is comparable to the rate of congenital abnormalities in the general population.

Preimplantation chromosomal testing involves collecting only a few cells from the embryo for diagnosis, which may not fully represent the entire embryo. Due to the technical limitations of the testing method itself, it is important to consult thoroughly with your doctor before proceeding. If pregnancy occurs, an amniocentesis can be performed if necessary to confirm whether the fetus is normal.

5) Next Generation Sequencing (NGS) Schematic Diagram







The chromosome test before implantation is a method of collecting and diagnosing a small number of cells from the embryo. Due to the technical limitations of the test method itself, it should be conducted after consulting with the attending physician and if successfully pregnant, amniocentesis is required to confirm that the results are again within the normal limits.



4. Recurrent Miscarriage

반복유산의 정확한 원인 분석 후, 최신 시술로 임신률 향상



Accurate cause analysis of recurrent miscarriage and improvement in pregnancy rates with the latest procedures

Patients who have undergone in vitro fertilization (IVF) three or more times and have had high-quality embryos implanted but still experience continuous failure or only achieve chemical pregnancies are classified as having recurrent implantation failure. This type of recurrent implantation failure exhibits mechanisms similar to the early forms of habitual miscarriage, so it is essential to conduct various tests to identify the underlying causes.

1) Causes and Tests

- Structural abnormalities of the uterus: Hysterosalpingography, ultrasound of the uterus, hysteroscopy
- ② Anatomical factors of the uterus: Hysterosalpingography, ultrasound of the uterus, hysteroscopy
- **3/G**enetic factors: Chromosomal abnormalities testing using the couple's blood
- Bacterial infections: Testing for bacterial infections such as vaginitis or salpingitis

- ⑤ Hormonal and metabolic abnormalities: Tests for ovarian function, obesity, diabetes, thyroid hormones, or prolactin levels
- ⑥ Immunological factors: Testing for Natural Killer (NK) cells and various autoantibodies
- ① Thrombophilia factors: Genetic mutation tests for related genes such as C protein, S protein, antithrombin III, MTHFR gene C677T polymorphism, Factor V Leiden, Prothrombin, and homocysteine to assess placental blood circulation disorders
- ® Endometrial factors
- Male infertility factors
- Medical history: Review of lifestyle habits, work environment,
 and medication use



2) Causes and Treatment

Classification	Causes	Treatment
Reduced endometrial	anatomical factors of the uterus	Check for abnormalities with hysteroscopy
receptivity	2 thin endometrium	endometrial stimulation and biopsy, various drug treatments (such as Viagra, high-dose estrogen)
	immunological factors	administration of immunoglobulins, steroids, heparin, and aspirin
	thrombosis	blood tests to assess placental blood circulation disorders
Reduced embryo quality	genetic abnormalities: Preimplantation genetic screening	To check for chromosomal abnormalities
	zona pellucida hardening of the egg	Perform assisted hatching or blastocyst embryo transfer
Others	Zona pellucida hardening of the egg	use of gonadotropin-releasing hormone analogs
	hydrosalpinx	laparoscopic surgery to perform salpingectomy

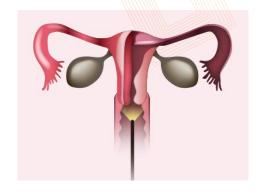
3) Implantation Failure and Endometrium

When there is permanent damage to the basal layer of the endometrium due to uterine surgery or endometritis, reduced blood circulation in the basal layer of the endometrium following uterine fibroids or surgery, endometrium that does not respond to estrogen treatment, inadequate response to ovarian stimulation injections, or excessive secretion of male hormones from the ovaries, the likelihood of successful implantation in the endometrium decreases.

As the causes of recurrent implantation failure are diverse and complex, it is essential to find the underlying cause through thorough consultation, observation, and testing with an experienced fertility specialist, and to provide appropriate treatment to improve the chances of successful implantation.

5. Hysteroscopy

1) Hysteroscopy Examination



Hysteroscopy involves inserting a hysteroscope, which is 3-5 mm thick, into the uterine cavity through the vagina and cervix. The internal walls of the uterus, including the anterior and posterior walls, the uterine fundus, and the entry points of the fallopian tubes, are examined directly via a monitor to check for abnormalities within the uterine cavity. If necessary, a biopsy or the use of specially designed instruments may be performed to address any identified lesions.

If congenital uterine abnormalities (such as septate uterus or bicornuate uterus) are suspected, or in cases of unexplained infertility, or if severe pelvic adhesions are suspected, or if the uterus is severely distorted, a diagnostic laparoscopy may be performed, which requires general anesthesia.

2) Indications for Hysteroscopy:

- 1 Unexplained infertility or repeated failure of in vitro fertilization (IVF) procedures.
- ② Persistent thin endometrium during IVF or ovulation induction.
- 3 Suspected intrauterine abnormalities (such as polyps, submucosal fibroids, or endometrial adhesions) or congenital uterine anomalies (such as uterine septum or bicornuate uterus) based on ultrasound or hysterosalpingography, for diagnosis and treatment.
- Persistent or recurrent abnormal uterine bleeding.

V. Fertility Preservation

1. 30 Egg Bank

Social egg freezing refers to a medical procedure where a woman's eggs are frozen and preserved to allow for greater flexibility in planning pregnancy and childbirth in the future. The need for social egg freezing has become more significant in recent years as more women are pursuing careers and delaying marriage, leading to an increase in the average age of childbirth. A woman's fertility (the ability to conceive) gradually decreases with age, and this decline becomes more pronounced after the age of 35. Therefore, women who wish to conceive later in life may face lower chances of pregnancy due to decreased ovarian function.

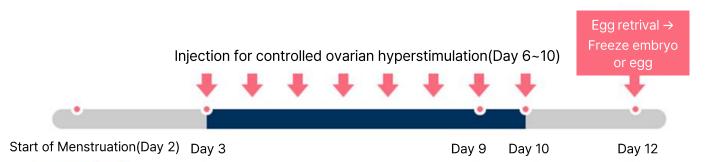
Social egg freezing involves freezing and preserving healthy eggs at a younger age, especially if childbirth is expected to be delayed. When the woman wishes to conceive in the future, she can attempt pregnancy using the frozen eggs, which offers a higher likelihood of successful pregnancy.

2. Candidates for the Procedure

- Cases where signs of early menopause may appear or occur due to genetic factors or other causes
- Women in their late 30s to early 40s who delay marriage due to social or professional commitments, or those who wish to freeze their eggs while healthy for future use when they desire pregnancy
- Cancer patients: In cases where ovarian function loss is a concern due to chemotherapy or chemical treatments
- Cases where ovarian removal is necessary due to surgical procedures
- When it is impossible to collect sperm after egg retrieval

3. Social Egg Freezing Procedure

After the start of menstruation, ovulation stimulation injections are administered for an average of 6 to 9 days. Two days after the completion of the injections, an egg retrieval procedure is performed to collect the eggs from the body, which are then frozen.



Ovarian Stimulation Injection and Egg Retrieval Schedule

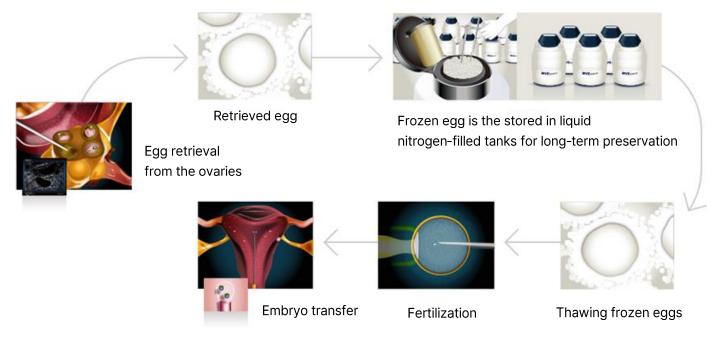
Egg Retrieval

This procedure involves using a needle to aspirate eggs from the ovaries while monitoring with a vaginal ultrasound. It is performed under sedation, so there is no pain, and the procedure typically takes about 10 minutes.



4. Egg Freezing and Thawing Process

(Vitrification with Liquid Nitrogen)



5. Advantages of Cha Hospital's Egg Bank

1) Oocyte Cryopreservation System Using Slush Nitrogen (SN2) Vitrification Method

Cha Hospital developed the world's first oocyte cryopreservation auxiliary method using slush nitrogen in 2005. This method prevents the formation of ice crystals within the cells and significantly reduces the time required for freezing, resulting in

minimal damage to the oocytes.



2) State-of-the-Art Long-Term Storage System

Automatic refilling and 24-hour monitoring with the latest equipment.

3) High-Level Freezing Technology and Pregnancy Success Rates Using Frozen Oocytes.

Cha Hospital: The First in Korea to Achieve Successful Birth Using Frozen Eggs Preserved Through the Egg Bank Successful Egg Thawing 9 Years Ago: Longest record for reusing frozen eggs.

- ① Diagnosed with chronic myeloid leukemia at age 22 in 2001.
- ② Frozen 7 eggs before starting chemotherapy.
- ③ Underwent radiation therapy and bone marrow transplant.
- Hormone therapy to maintain ovarian and uterine function.
- © Declared leukemia-free in 2006, married in 2009.
- 10 In 2010, thawed the frozen eggs and performed in vitro fertilization.
- O Created 2 embryos and implanted them in the uterus.
- Gave birth to a son in July 2011.





Awards for CHA Hospital's Egg Freezing Technology

2005

Awarded Best Paper in the Video Presentation Category
at the 61st American/Canadian Fertility Society Conference
"Development of a New Concept in Egg Freezing Preservation Using Slush
Nitrogen"

2005

Awarded Best Video Presentation at the 56th American Society for Reproductive Medicine Conference

"Introduction of Vitrification Freezing Method Using Metal Grids and the World's First Successful Pregnancy and Delivery"

1998

Awarded Best Poster at the 54th American Society for Reproductive Medicine and the 16th World Congress on Fertility and Sterility

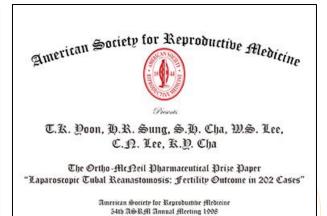
"Study on Fertilization and Blastocyst Formation Through Vitrification Freezing Method"



T.R. Yoon, S.K. Cha, J.O. Sohn, D.R. Lee, J.P. Kwak, K.Y. Cha

First Prize for Technical Achievement in Video "Successful Clinical Application of Oocyte Vitrification Using Gold Grid and Slush-Liquid Nitrogen"

> American Society for Reproductive Medicine G1st ASRM Annual Meeting 2005

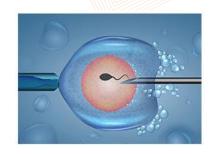


VI. Infertility Treatment

1. Intracytoplasmic Sperm Injection (ICSI)

Intracytoplasmic Sperm Injection (ICSI)

 A procedure in which a sperm is directly injected into the oocyte to fertilize the embryo

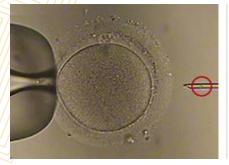


1) What is Intracytoplasmic Sperm Injection (ICSI)?

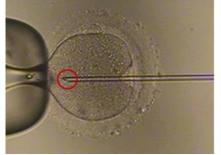
ICSI is a procedure used for cases where the husband's sperm count is extremely low or when there is a very high rate of sperm abnormalities as determined by specialized semen analysis. After retrieving the eggs, the surrounding cells are removed, and sperm is injected directly into the egg's cytoplasm using a fine glass pipette to induce fertilization. ICSI is a highly specialized assisted reproductive technique that can only be performed by highly skilled practitioners.

2) Who Are the Candidates for Intracytoplasmic Sperm Injection (ICSI)?

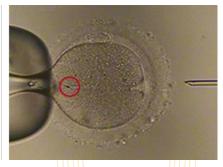
- Severe Functional Abnormalities of Sperm When sperm motility, count, or morphology are abnormal.
- ② Obstructive Azoospermia When sperm is obtained from the testis or epididymis and surgical correction is not possible. Non-Obstructive Azoospermia When sperm is obtained from the testis.
- ③ Ejaculatory Disorders Such as those caused by spinal cord injuries.
- ⑤ Fertilization of Frozen Eggs and Immature Eggs.
- © Genetic Diagnosis of Pre-Implantation Embryos For IVF procedures with embryos undergoing genetic testing before implantation.



Egg before Intracytoplasmic Sperm Injection



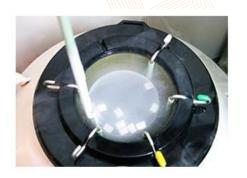
Intracytoplasmic Sperm Injection Procedure



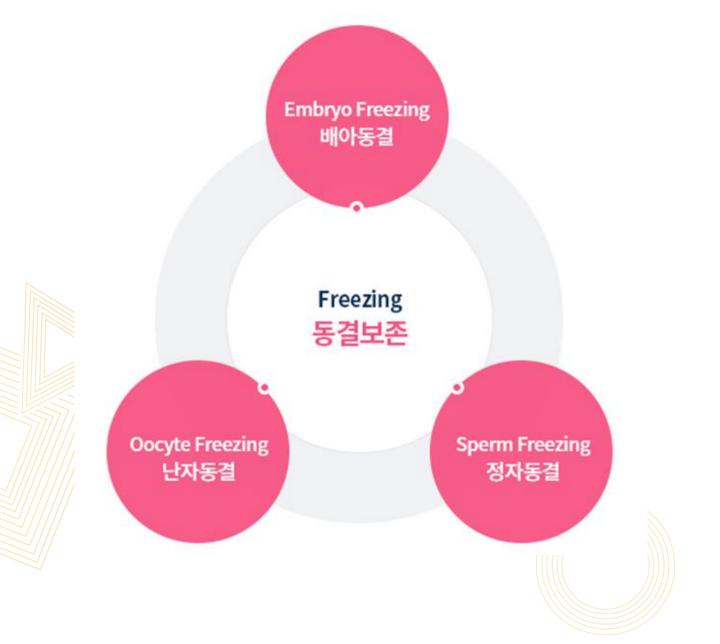
Sperm injected into the egg

2. Cryopreservation

A method of storing cells at ultra-low temperatures and thawing them for use when needed.



Cryopreservation is a method of storing cells (eggs, sperm, embryos) at ultra-low temperatures (-196°C) to temporarily suspend their biological activity. When needed, the cells can be thawed and used.



1) Embryo Freezing

During the in vitro fertilization (IVF) process, multiple eggs are retrieved through ovarian stimulation, which allows for the creation of several embryos. However, to prevent multiple pregnancies, the number of embryos transferred is typically limited to 1-3. The remaining embryos are frozen for future use. If the initial embryo transfer cycle fails or if a subsequent pregnancy is desired after a successful pregnancy, the frozen embryos can be thawed and transferred during the next ovulation cycle to attempt another pregnancy.

2) Who Should Consider Embryo Freezing?

- ① When There Are Remaining Embryos After IVF If there are surplus embryos left after the initial embryo transfer.
- ② In Cases of Severe Ovarian Hyperstimulation Syndrome When severe ovarian hyperstimulation syndrome due to ovarian stimulation poses various risks.
- ③ When the Uterine Lining Is Not Suitable for Embryo Transfer If the current endometrial lining is not appropriate for embryo transfer.
- When Anatomical Issues Prevent Successful Embryo Transfer For example, severe cervical stenosis that results in failed embryo transfers.
- When the Patient's Health Is Poor at the Time of Transfer For example, if there is a fever or other health concerns during the planned transfer.
- When Synchronizing the Timing of Egg Donation Is Difficult When it is challenging to align the timing of egg donation between the donor and recipient.
- When Higher Pregnancy Rates Are Expected from Natural or Hormone-Induced Cycles - When embryo transfer during a natural cycle or hormoneinduced cycle is expected to yield higher pregnancy rates compared to during an ovarian stimulation cycle.

3) How is Embryo Freezing Performed?

The method for freezing embryos involves processing the embryos in a culture medium with cryoprotectants added. The embryos are then placed in a container with this solution and subjected to freezing using either a freezing machine or vitrification method. Finally, the embryos are stored at ultra-low temperatures of -196°C for long-term preservation.

4) Oocyte Freezing

Oocyte freezing involves preserving eggs without fertilizing them. This technique allows for the storage of healthy eggs in an egg bank, which can be thawed and used later when needed. This method is beneficial for women at risk of early menopause, those who wish to delay pregnancy due to social or professional reasons (Social Banking), or women expecting to lose ovarian function due to cancer treatment. By preserving their eggs for future use, these women can attempt pregnancy at a later time.

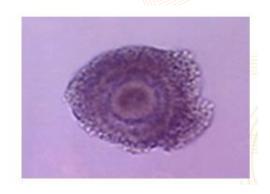
Daegu CHA Fertility Center has developed a freezing technique using slush nitrogen, which enhances the success rate of in vitro fertilization (IVF) after thawing the eggs.

Sperm Freezing

Sperm freezing is a method used to preserve sperm when it is not possible to collect semen on the day of artificial insemination or in vitro fertilization (IVF). It is also useful for men undergoing treatments that may cause genetic mutations in sperm (such as chemotherapy) or before undergoing testicular surgery. In such cases, semen is collected in advance and frozen for future use. The preserved sperm can be thawed and used whenever needed.

3. In Vitro Fertilization of Immature Eggs

A method of retrieving immature oocytes, maturing them in vitro, and then fertilizing and transferring them.

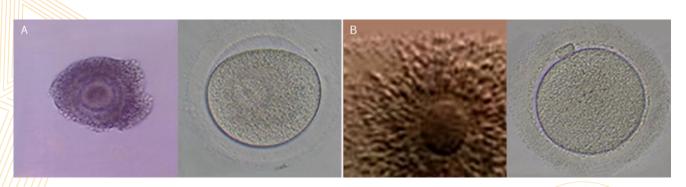


1) (IVM-IVF; In vitro maturation-In Vitro Fertilization)) In vitro maturation (IVM)-In vitro fertilization (IVF) of immature eggs

In the process of in vitro fertilization (IVF), only immature eggs can be retrieved, or immature eggs can be collected and frozen before undergoing cancer treatments such as radiation or chemotherapy. These frozen eggs can then be thawed and used for fertilization after cancer treatment.

In particular, for patients with polycystic ovary syndrome (PCOS), immature eggs can be retrieved without ovarian stimulation injections, matured in vitro, and then fertilized and transferred as embryos.

2) Maturity of Retrieved Eggs

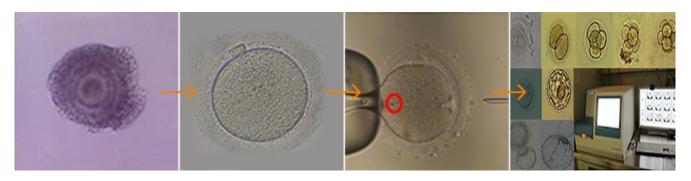


Immature Egg (GV)

Mature Egg (MII)

Matured state after removing cumulus cells surrounding the egg

3) In Vitro Fertilization Process for Immature Eggs



Immature Egg Retrieval

Maturation of Immature Eggs Intracytoplasmic Sperm Injection Fertilization and Culture, Embryo Transfer

This technique successfully achieved pregnancy for the first time in the world at CHA Women's Medical Research Institute in 1988, and it continues to attract significant interest from infertility clinics worldwide.





4. Pre-implantation Genetic Diagnosis

Technology developed to have genetically normal children



1) What is pre-implantation genetic diagnosis (PGD) for IVF?

PGD is a technique developed to enable individuals with congenital genetic disorders (such as hemophilia, muscular dystrophy, fragile X syndrome, Down syndrome, etc.) or carriers to have genetically healthy children.

In the past, when parents had congenital genetic disorders, the best option was to perform therapeutic abortion as early as possible through prenatal testing.

With this technology, patients can avoid repeated abortions and the associated mental and physical distress. It is currently the only treatment method allowing patients with genetic disorders to conceive healthy children and will continue to be a field of ongoing research and development.

2) What is the process of in vitro fertilization (IVF) with pre-implantation genetic diagnosis (PGD) ?

First, the parents' genetic disorders are investigated, and probes are created to analyze the chromosomes or genes with genetic abnormalities. Then, using IVF methods, eggs are retrieved from the woman and sperm from the husband for fertilization.

The embryos are cultured for 2-3 days until they reach the 4-cell or 8-cell stage. At this stage, one or two cells from each embryo are carefully separated using a micromanipulator. The isolated cells are examined for genetic abnormalities using polymerase chain reaction (PCR) or karyomapping genetic analysis, and only the embryos determined to be normal are selected for implantation into the patient's uterus.

3) PGT-A (PGS) (Preimplantation Genetic Testing for Aneuploidies): Diagnosis Method for Genetic Numerical Abnormalities

This is a method of diagnosing the normality of genes by collecting 5 to 10 cells from a blastocyst-stage embryo that has been cultured for 5 to 6 days after egg retrieval and using Next Generation Sequencing (NGS).

Recently, biopsies have been performed on blastocyst-stage embryos at 5 to 6 days, which have a lower likelihood of mosaicism (a condition in which two or more different genotypes are present in one individual) and higher survival rates. Using NGS, a chromosomal DNA testing method, all chromosomes are examined at once.

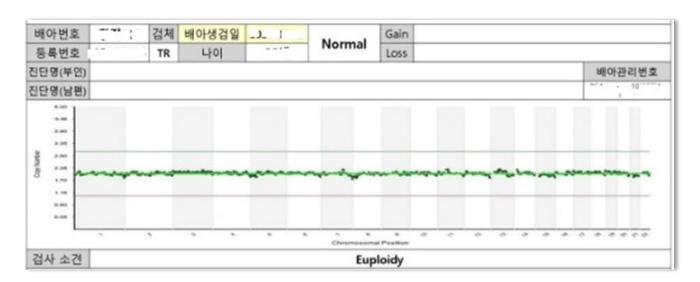
This is the PGT-A result using the NGS method, which allows for the diagnosis of all 46 chromosomes.



(1) Embryo available for transfer

A. Normal embryo

The image shows the result of an embryo with a normal chromosomal count. The Y-axis at the bottom of the image indicates the chromosome numbers, while the X-axis represents the number of chromosomes. As all chromosomes have a normal count of 2N, they are represented as a straight line in the image.



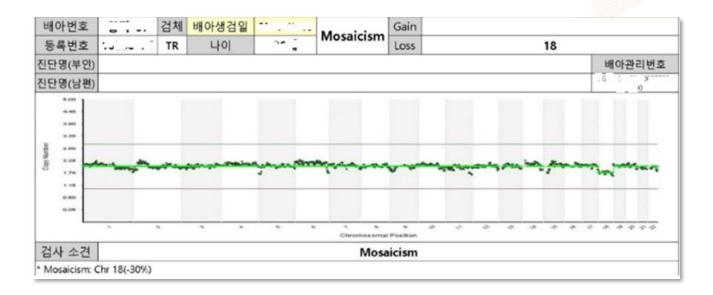
B. Mosaic embryo

This is the result image of a mosaic embryo. Mosaicism refers to a condition in which chromosomal abnormalities are found in only some of the cells collected for the PGT test.

The higher the proportion of abnormal cells compared to the total number of cells collected, the higher the level of mosaicism.

In the image, the line drops down at chromosome 18, indicating that chromosome 18 has -30% mosaicism.

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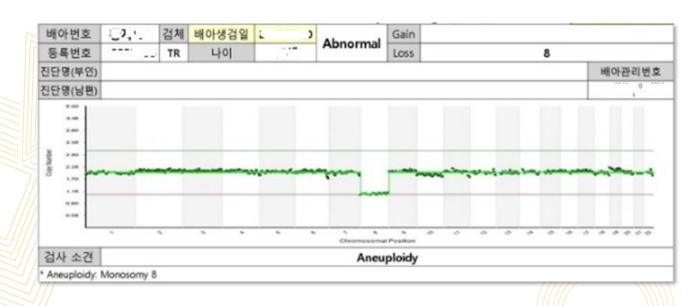


(2) Embryo not available for transfer

This is the result image of an embryo with abnormal chromosomes.

A typical case is when there is one more or one less chromosome than normal.

The image shows the case where chromosome 8 is missing one copy, resulting in a drop from the straight line (2N) downwards (1N).



4) Preimplantation Genetic Testing for Chromosomal Structural Rearrangement (PGT-SR)

Chromosomal structural abnormalities refer to rearrangements in chromosomes such as translocations, inversions, deletions, and duplications, which occur after a chromosome is broken and then incorrectly rejoined. Structural abnormalities are defined as balanced if all normal chromosomal components are present, and unbalanced if there is an addition or deletion of parts of chromosomes. Carriers of balanced rearrangements generally do not show phenotypic abnormalities but are likely to produce gametes with unbalanced chromosomes, potentially leading to miscarriage or birth defects. Balanced rearrangements are more commonly found in couples with recurrent miscarriages or infertile men compared to the general population, making chromosomal testing necessary for diagnosis.

5) What is the process of in vitro fertilization (IVF) with preimplantation genetic testing for monogenic/single gene defects (PGT-M)?

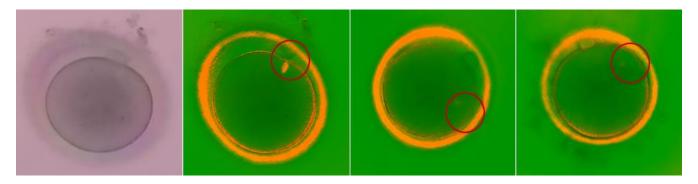
PGT-M is a more complex testing method than PGS. First, the parents' genetic disorders are investigated, and probes are created to analyze the chromosomes or genes with genetic abnormalities. The entire process from the initiation of testing to its completion is time-consuming. Additionally, not all genetic disorders can be tested; only those specified by the Ministry of Health and Welfare are legally permitted for testing.



5. Latest Advances in Assisted Reproductive Technologies

1) Spindle Observation and Intracytoplasmic Sperm Injection (ICSI)

This technique involves checking the location and presence of the spindle in the egg to select healthy eggs for fertilization. A specialized device is used to observe the egg and ensure the creation of healthy embryos.



The spindle has settled in its normal position

The spindle has settled in an abnormal position

2) Embryo Development Tracking System



Real-Time Embryo Development Monitoring for Selecting Healthy Embryos

In vitro fertilization (IVF) often involves transferring multiple embryos to increase the chances of pregnancy, leading to a higher risk of multiple pregnancies compared to natural conception. However, to ensure the safe delivery of babies, both the government and academic communities recommend reducing the number of embryos transferred. To increase the success rate of pregnancy with fewer embryos, it is crucial to select healthy embryos for transfer.

Traditionally, a "Time Point System" was used to observe embryos at specific stages before transferring them. However, this method could miss embryos that exhibited abnormal development at stages not observed. To address this limitation, the "Real-Time Embryo Monitoring System" (Time-lapse imaging system) is now employed. This advanced technique allows continuous observation of developing embryos without exposing them to the external environment, enabling real-time monitoring from fertilization to transfer and facilitating the selection of morphologically superior embryos.

At Daegu CHA Fertility Center, the Real-Time Embryo Monitoring System is used to enhance pregnancy success rates and ensure the birth of healthy babies by selecting the healthiest embryos.

Eligibility for Real-Time Embryo Monitoring System

- Cases of repeated IVF failure or two or more chemical pregnancies after previous IVF procedures.
- ② Scheduled single embryo transfer.
- Medical opinions suggesting the need for continuous embryo observation.

3) CHA ART Safety System



Thorough Identification Management with Partner Information System (RI Witness System) Before Procedure

One of the most critical aspects of managing infertility treatments is accurately identifying and managing collected eggs, sperm, and cultured embryos for each patient. At Daegu CHA Fertility Center, the Partner Information System (RI Witness System) is implemented to ensure meticulous management. Each sample collected from patients is tagged with an identification label. The RI card contains an electronic ID with patient information, and RFID (Radio Frequency Identification) technology is used to record and track sample information at each stage of the infertility treatment process.



Insemination and In Vitro Fertilization (Egg Retrieval and Embryo Transfer) - Required Personal Authentication Card









STEP 1: Registration

After consulting with the primary physician and determining whether to proceed with insemination or IVF, obtain a personal authentication card at the registration desk on the day of the procedure. This card contains an electronic chip (RFID) with the couple's information.

STEP 2: Insemination Procedure

The authentication system will be used during the insemination procedure, so you must bring your personal authentication card on the day of the procedure.

- ① Confirm identity using the authentication system before the procedure.
- ② Verify the match of the sperm sample from both partners before proceeding with the procedure.

STEP 3: In Vitro Fertilization Procedure (Egg Retrieval and Embryo Transfer)

- ① It is essential to bring your personal authentication card on the day of the procedure! Confirm your identity upon entering the procedure room.
- ② Authenticate your identity before the egg retrieval procedure.
- ③ Bring your authentication card for identity verification before the embryo transfer procedure.

STEP 4: Sperm Collection / Egg and Embryo Culturing and Freezing

Tubes containing sperm, culture dishes, eggs, and embryos are tagged with special RFID technology. This technology helps identify patients during embryo transfer or freezing processes by attaching a special tag containing the couple's information.

Basic Questionnaire



Basic Questionnaire(For Men)

		Name	Age	Birthday	Blood type	Occupation	Marital status	Nationality	E mail
1	Patient				71				
2	Wife								
3	Year of Marriage() Legally Registered? : □Yes □No Proof of legal marriage is required in IUI and IVF (a copy of marriage license and/or family registry)								
4	How long have you tried to get pregnant with unprotected sex? ()Years ()Months								
5		wife ever been pre cribe(include misc Method of	arriage	es, abortions	, and ect	copics) Pregna / Abortion		Children_ ent Age of Ch	nild
6	Has you ever had a Semen Analysis? □No □Yes (Results: □Normal □Abnormal)								
7	When did y	ou last ejaculate?	' (day	ago)				
8	Do you have any medical condition (diabetes, hypertension, thyroid, etc)? ☐No ☐Yes If yes, describe								
9	Are you currently taking any medication? No Yes(List) Are you allergic to any type of medication? If yes, list.								
10	Have you ever had any surgeries? □No □Yes(Type of surgery:)								
		the family have ar es If yes, describe(•	lical conditic	n (diabe	tes, hypertens	sion, thyro	oid, etc)?)
12	Do you drink or smoke? ☐ Yes ☐ No If yes, how many packs a day? () How many years have you been smoking? () How many times do you drink per week? () How many years have you been drinking? ()								
13	What would you like to get done at CHA Medical Center? □Exams □Tracking Ovulation □IUI □IVF □Surgery □Undecided								
14/	□ Referre □ Media	ou hear about our ed by friend (newspaper, maga yee of Hospital		☐ Inte etc) ☐ Alre		w about CHA	Fertility (Center, Seoul	station)



Basic Questionnaire(For women)

		Name	Age	Birthday	Blood type	Occupation	Marital status	Nationality	E mail		
1	Patient										
2	Husband										
3	Year of Marriage() Legally Registered? : _Yes _No Proof of legal marriage is required in IUI and IVF (a copy of marriage license and/or family registry)										
4	How long have you tried to get pregnant with unprotected sex? ()Years ()Months										
5	Have you ever been pregnant? □No □Yes										
	If yes, describe(include miscarriages, abortions, and ectopics) Pregnant() Children()										
	Year										
6	•	Menarche() First (starting) day of last period ()									
		Menstrual history: ☐ regular ☐ irregular									
	Interval: ☐ 22-24days ☐ 25-27days ☐ 28-30days ☐ 30-35days ☐ Irregular Duration: ☐ 2-4days ☐ 4-5days ☐ 5-7days ☐ more than 7days ☐ Other days										
	Duration: 2-4days 4-5days 5-7days Infore than 7days Otherdays Dysmenorrhea: None Mild Severe										
7	Have you ever done a PAP Smear? No Yes(Last exam date :Year Normal Abnormal)										
8	Type of contraception:										
9	Have you ever had any infertility tests? No Yes										
		se indicate which									
		Hormone Test() HSG / Fallopian Tube Exam() Hysteroscopy()									
10	-	usband ever had		•	∐No	□Yes					
	•		Abnorma								
11		eceived any Infer	tility Tre of Times				☐ Yes	. 11			
		Ovulation #	or times	Hosp	ıtaı	Methods IUI	# of Times	HOS	pital		
		Medication				IVF					
12		e any medical co	ndition	(diabetes, h	vpertens			lo □Yes			
'-	If yes, desc	•		(, -	,,	,,				
13	Are you cui	rrently taking any	medica	ation? 🗌 No	□Y€	es(List)		
	Are you allergic to any type of medication? If yes, list.										
14	Have you e	ever had any surg	eries? [□No □Y	es(Type	of surgery:)		
/15/	' / / /*	the family have a	•	ical condition	n (diabe	tes, hyperte	nsion, thyr	oid, etc)?			
/////	' 	□No □Yes If yes, describe()									
/16//	Do you drink or smoke? ☐ Yes ☐ No										
'/////	If yes, how many packs a day? () How many years have you been smoking? () How many times do you drink per week? () How many years have you been drinking? ()										
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//17/	What would you like to get done at CHA Medical Center? □Exams □Tracking Ovulation □IUI □IVF □Surgery □Undecided										
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/	☐ Referred by friend ☐ Internet ☐ Media (newspaper, magazine, etc) ☐ Already knew about CHA Fertility Center, Seoul station										
		newspaper, magazi ee of Hospital	ne, etc)		new abo	ut CHA Fertili	ty Center, S	eoul station			
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