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Creando FAMILIAS

ROBOTIC SURGERY
PRECISION AT THE SERVICE OF FERTILITY

PGT-A COMPLETE
SEEING THE EMBRYO LIKE NEVER BEFORE

THE IMPACT OF **ENDOMETRIOSIS** ON FERTILITY

Reproduction International Group

Creando

FAMILIAS

Where science meets hope

Reproductive medicine is perhaps one of the fields where technology and hope are most closely intertwined.

Behind every microscope, robotic arm, and genetic report, there are not only data and cells, but life projects, fears, and a profound desire that calls for our commitment and dedication. Over the past decade, a "new era" has emerged when it comes to in vitro fertilisation, strengthening our country's position as a global leader. What began as an effective technique has evolved into a high-precision process in which laboratory innovation, genetics and ongoing research converge with a single aim: to increase success rates and achieve our main goal; the birth of a healthy baby.

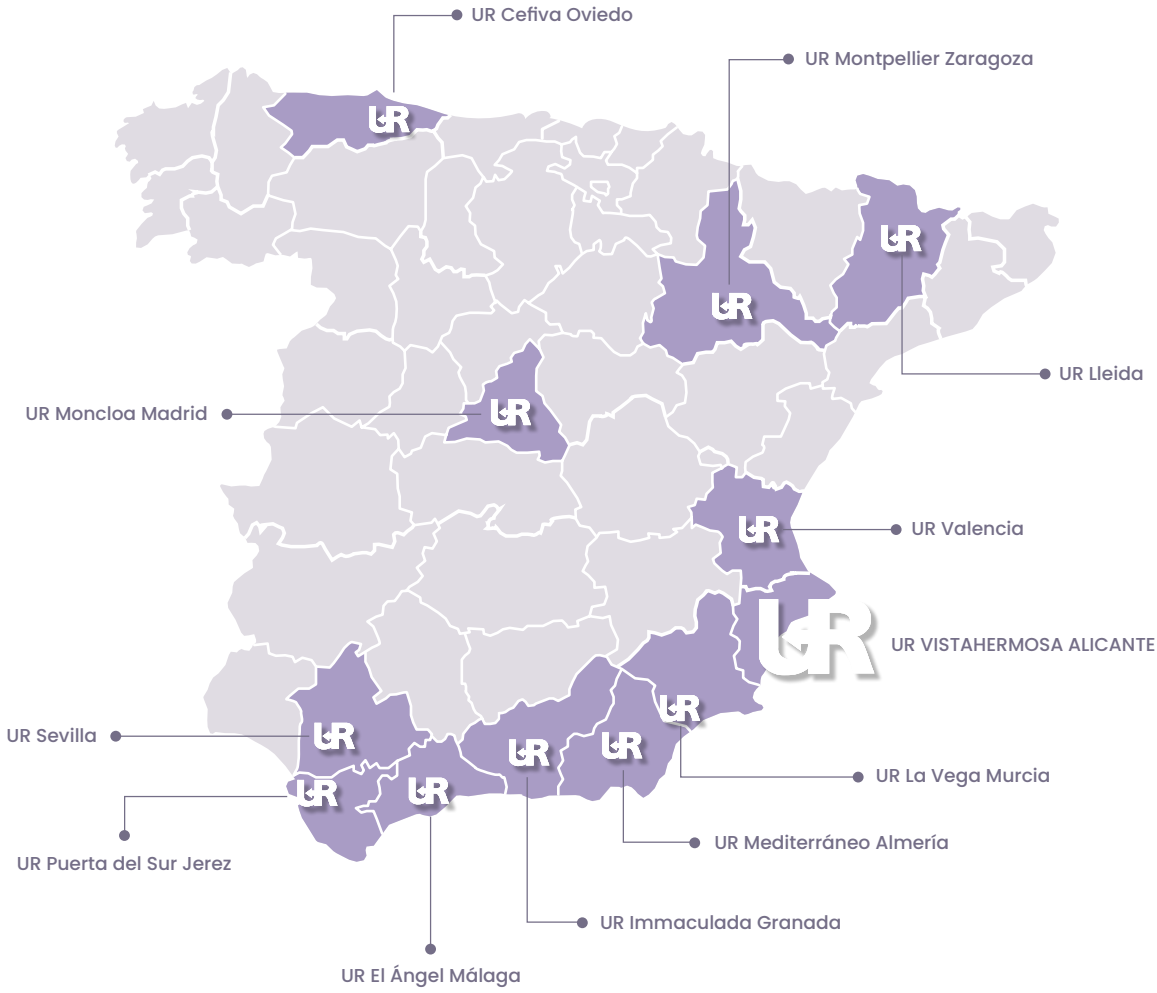
The adoption of **robotic surgery** is a clear example: today, procedures can be performed with a level of precision that once seemed like science fiction, helping to preserve women's fertility and safeguard their reproductive future. The same pursuit of excellence can be seen in laboratories, where we can now **"see the embryo as never before"**. Furthermore, thanks to **PGT-A Complete**, we can detect abnormalities that previously went unnoticed, helping to reduce the frustration and distress associated with implantation failures.

SHowever, as professionals, we understand that success is not measured solely by pregnancy rates. As this issue reflects, **"caring" and "accompanying"** are just as important as "treating." The patient-professional relationship lies at the heart of this work. In moments of joy, but especially in moments of vulnerability, empathetic listening gives meaning to all the technological advances. A medical technique can only be considered truly successful if the patient feels supported and understood throughout the entire process.

This sensitivity should also be reflected in the laws that protect our patients. Therefore, we welcome the steps towards **reforming Spain's Assisted Reproduction Law**, a crucial advancement aimed at aligning oocyte cryopreservation with that of sperm. This amendment not only addresses the legal uncertainty surrounding stored samples, but also grants women greater autonomy and freedom to decide over their reproductive future, legally recognising what we have always upheld in our clinics: the right to make decisions about their own fertility.

This commitment to holistic care and progress extends beyond borders. The opening of the new **UR Al Injab clinic in Rabat** reflects our commitment to bringing this compassionate form of medicine to new places, so that more people can begin their journey to motherhood in an environment that they trust and where they feel safe.

We recommend reading these pages not only as a collection of scientific advances, but as a reflection of our daily commitment: ***TO PLACE STATE-OF-THE-ART TECHNOLOGY AT THE SERVICE OF THE MOST HUMAN OF DESIRES: THE MIRACLE OF LIFE.***



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Dr. Francisco Anaya Blanes
Medical Director - UR Group

ROBOTIC SURGERY

PRECISION AT THE SERVICE OF FERTILITY

21st-century medicine has transformed the operating room with the introduction of surgical robots, tools that give specialists unprecedented precision. Far from being an autonomous machine, this advanced system, such as the well-known Da Vinci, acts as an extension of the surgeon, enabling three-dimensional vision and millimetre-level precision. This technological advancement represents a turning point in surgical outcomes, providing greater safety in complex procedures.

Although it has had a particularly significant impact in **Gynaecology**, the Da Vinci system has also demonstrated its value in other medical fields. It is currently used with great success in specialties such as **Urology**, particularly to treat prostate cancer, as well as in **general surgery, thoracic surgery**, to name but a few. This versatility confirms that robotic technology is already a reality, improving the outcomes of even the most complex procedures in modern medicine.

WHAT IS ROBOTIC SURGERY?

When people hear about robotic surgery, they often imagine a machine operating on its own. In reality, however, **the robot never operates on its own**. It is an advanced system of robotic arms that the surgeon controls with complete precision from a console located within the operating room.

From this console, the specialist views a **3D image** of the inside of the patient's body, magnified up to ten times, and controls the instruments using their hands and feet. The robot replicates each of these movement, **eliminating natural tremor and scaling it down**: where the human hand makes a ten-centimetre movement, the instrument can execute it with millimetre-level precision.

HOW DOES THE DA VINCI SYSTEM WORK?

- The surgeon sits at an **ergonomic console** away from the operating table.
- **Four robotic arms** hold cameras and surgical instruments inside the patient's abdomen.
- The vision is **3D and magnified up to ten times** compared to open surgery.
- The surgeon's movements are processed in real time to **eliminate tremor.**
- The system does not operate autonomously: **it responds entirely to the surgeon's control.**

GENERAL BENEFITS FOR THE PATIENT

Robotic surgery is an evolution of **minimally invasive laparoscopic surgery** and shares many of the same advantages over traditional open surgery.

However, it adds a new level of precision, vision, and instrument articulation that can make a meaningful difference in outcomes. This **millimetre-level precision** helps preserve delicate structures that are essential to the patient's functional recovery.

LESS PAIN AND FASTER RECOVERY

The incisions are very small; between 0.5 and 1.5 centimetres, compared with the large incisions used in open surgery. This results in **significantly less post-operative pain**, a reduced need for strong painkillers, and a quicker return to day-to-day activities. Many patients are discharged the same day or the following day after the procedure.

LESS BLOOD LOSS

The robot's magnified vision and precision enable the surgeon to identify and preserve **small blood vessels** that might otherwise be overlooked in conventional surgery. Blood transfusions are far less common.

REDUCED RISK OF INFECTION

Because the incisions are minimal and carried out in a highly controlled environment, the **risk of surgical site infection** is significantly **lower** than in open surgery.

REDUCED RISK OF LONG-TERM COMPLICATIONS

Adhesions, scar tissue that can cause organs to stick together, are among the most common complications following conventional abdominal and pelvic surgery. The reduced tissue handling enabled by robotic surgery significantly decreases these.

IMPACT OF ROBOTIC SURGERY IN GYNAECOLOGY

Gynaecology is one of the specialties robotic surgery has had the greatest impact on. The female pelvis is a small, complex anatomical space where the reproductive organs, bladder, intestines, and a dense network of blood vessels and nerves all coexist.

The main gynaecological procedures currently performed using robotic systems include:

- **Myomectomy**: removal of uterine fibroids while preserving the uterus.
- **Hysterectomy**: removal of the uterus, when necessary.
- **Treatment of endometriosis**, including deep infiltrating endometriosis.
- Pelvic organ **prolapse** surgery.
- Tratamiento de **quistes** de ovario complejos.
- **Staging and treatment** of endometrial, cervical, and ovarian **cancers**.

In all these procedures, the 3D vision and the articulation of robotic instruments, capable of rotating 360 degrees, something impossible for the human wrist, make it possible to work in the deepest areas of the pelvis with unprecedented precision and care.

SURGICAL INNOVATION AIMED AT PRESERVING FERTILITY

When a patient of reproductive age requires surgery, preserving fertility is not a secondary consideration, it is a **medical priority**. This is where robotic surgery can make a life-changing difference. **Robotic surgery enables more precise interventions**, minimising damage to healthy tissues. This has a direct impact on the patient's reproductive capacity and her chances of achieving pregnancy in the future. In assisted reproduction, this is particularly important, as appropriate surgical intervention can significantly improve reproductive prognosis, especially in patients with complex conditions.

ROBOTIC MYOMECTOMY: PRESERVING THE UTERUS, PRESERVING MOTHERHOOD

Fibroids or myomas are extremely common benign tumours of the uterus. In many cases, they cause no symptoms, but when they develop in certain areas, such as inside the uterine cavity, within the uterine muscle wall, or on the outer surface, they can lead to heavy bleeding, pain, and, above all, difficulty conceiving or maintaining a pregnancy.

Robotic myomectomy enables fibroids to be removed with exceptional precision, followed by careful reconstruction of the **uterine wall using high-quality sutures** that are essential for the uterus to properly support a future pregnancy. Published studies indicate that the robotic technique reduces intraoperative blood loss and improves suture quality compared with other minimally invasive approaches.

ENDOMETRIOSIS: THE SILENT ENEMY OF FERTILITY

Endometriosis is one of the most common causes of female infertility. In this condition, tissue similar to the endometrium grows outside the uterus, where it can attach to the ovaries, fallopian tubes, intestines and other organs. Its most severe form, infiltrating deep endometriosis, can affect vital structures within the pelvis. Surgical treatment of deep endometriosis is one of the areas where **robotic surgery demonstrates its greatest advantages**.

The magnified imaging makes it possible to detect endometriosis implants just a few millimetres in size that would be invisible in conventional surgery. The articulation of the instruments enables dissection in hard-to-reach areas near the ureter, iliac vessels, or rectum, reducing the risk of injury to nearby organs. The ultimate goal is always the same: to **remove all dis-**

eased tissue while preserving ovarian and tubal function as much as possible, the two key factors for natural fertility. Robotic surgery allows us to see what we could not see before and access areas we could not previously reach. For a patient with severe endometriosis, this can make the difference between conceiving and not conceiving.

SURGERY ON THE FALLOPIAN TUBES AND OVARIES

Pelvic adhesions, caused by previous infections, prior surgeries, or endometriosis itself, can obstruct or distort the fallopian tubes, preventing the egg and sperm from meeting. Robotic adhesiolysis, the release of these adhesions using robotic instruments, allows pelvic anatomy to be restored with gentle tissue handling that helps minimise the formation of new scar tissue.Similarly, surgery for ovarian cysts, especially endometriomas, the "chocolate cysts" characteristic of endometriosis, greatly benefits from robotic precision, which helps preserve healthy ovarian tissue and, with it, the patient's ovarian reserve.

PRECISE AND SAFE CARE MODEL

The recent adoption of this technology in centres such as HLA Vistahermosa Clinic reflects the growing integration of robotic surgery into modern gynaecological practice. The integration thereof into multidisciplinary teams enables a more comprehensive approach, where gynaecologists, assisted reproduction specialists, and other professionals work in coordination to optimise outcomes. This approach is especially relevant in a society where delayed motherhood is increasingly prevalent. Advanced maternal age is associated with a higher incidence of gynaecological conditions and reduced fertility, which increases the complexity of cases seen in clinical practice. In this context, having more precise and safer surgical tools can improve the reproductive prognosis for many patients.

TECHNOLOGY AND MEDICAL EXPERIENCE

Robotic surgery should not be seen as a substitute for the healthcare professional. This tool enhances a surgeon's capabilities, but clinical judgement, experience and a tailored assessment of each case remain central to decision-making. Technology alone is not sufficient; it must be used within a patient-centred care model where personalised treatment and ongoing support are key pillars. In fertility care, this approach is particularly important, given the emotional weight that often accompanies these treatments.

Ultimately, this is a field of medicine that not only strives to treat disease, but also to preserve reproductive function while improving the chances of pregnancy. A field of medicine that brings together technological innovation with clinical expertise to address one of today's major challenges: helping people's dream of building a family come true.

In summary:

WHAT DOES ROBOTIC SURGERY CONTRIBUTE TO YOUR HEALTH?

- MINIMAL INCISIONS: less pain and virtually invisible scars.
- MAGNIFIED 3D VISION: enables greater surgical precision.
- 360° ARTICULATED INSTRUMENTS: provide access to hard-to-reach areas.
- Reduced bleeding and fewer transfusions.
- Reduced risk of infection and adhesions.
- Shorter hospital stay and faster recovery.
- Preservation of key fertility-related structures.

Bernardo Fernández Martos
Coordinator of the Paramedic Department - UR Group

CARING SUPPORTING TREATING

PATIENT-PROFESSIONAL RELATIONSHIP IN ASSISTED REPRODUCTION

The inability to get pregnant after a period of unprotected sex is one of the biggest crises that many couples often face.

IT OFTEN INVOLVES YEARS OF TRYING TO GET PREGNANT, WITH CONTINUOUS DISAPPOINTMENT MONTH AFTER MONTH, BEFORE THE COUPLE DECIDES TO SEEK HELP FROM SPECIALISED TEAMS.

Depending on the motivations and significance of reproductive functions and children for each couple, the unfulfilled desire for them will be a more or less difficult reality to face, but in most cases they are of sufficient importance for the couple to seek help from professionals with the aim of achieving pregnancy.

From that moment on, a process begins that generates complex emotional feelings, because of the invasive feeling of professionals becoming involved in an area as intimate as sexual activity and conception, with various exploratory procedures, and also because of the discomfort and inconvenience inherent in the explorations and treatments themselves.

All professionals involved in this field should play a role in providing **comprehensive care** for our patients, to help **reduce the emotional stress** generated by their infertility issues and the complicated process of studying and treating it, knowing that there is no clear end. The reproduction team must fully prepare both members of the couple for all situations that may occur before, during and after the application of assisted reproduction techniques, because, in this context, many patients develop significant emotional stress because they do not know what to expect from the techniques, or the reason for many situations that occur during the course of the techniques.

The first contact with the field of assisted reproduction will take the couple away from their everyday world and transport them to an entirely **new context** for an indefinite period of time, one that is **unfamiliar and often confusing**, with rules that are sometimes too rigid and language that is difficult to understand. Therefore, from

the beginning, we must create a therapeutic environment based on **trust and respect**, promoting free expression of feelings and demonstrating availability and understanding of the situation and the impact that the diagnosis has on their social and romantic relationship; and also ensuring the utmost privacy, to prevent their situation entering the public, social or family domain.

For many couples, the discovery that they are infertile destroys feelings of control over their daily life, over their own bodies, over the emotions generated by the process, over sexual relations that are restricted or marked by treatment guidelines, over their own intimacy, and even over their plans to create a family at a favourable age.

Once they have decided to start using reproductive techniques, this situation can **drag on for years** and can also become a particularly difficult source of ongoing stress for those affected, due to the continuous feelings of anxiety and frustration caused by various incidents and failed attempts, and also due to the conscious and unconscious emotions triggered by the inability to satisfy their desire for their own child.

The term **"patient-centred care"** refers to the emotional support that any member of the assisted reproduction team provides through understanding and support in the face of stressful events or the prevention of stressful events. Patient-centred care is necessary to create a good relationship foundation that will benefit the patient, making them feel comfortable seeking support from the team and thus avoiding treatment drop-outs, poorly managed therapies and negative outcomes.

In recent times there has been increasing interest in the concept of **holistic health care**, and the notion that the physical, mental, social and spiritual aspects of a person's life must be integrated as a whole. This has led to a broader concept of patient care in which psychological, social and environmental needs are treated with the same importance as physical needs.

As professionals working with couples undergoing reproductive treatment, we are ideally placed to apply holistic healthcare. With the help of **continuing education, effective communication**, professional counselling and a knowledge-based clinical practice, we must help to implement this type of care so that couples feel protected in the face of emotional stress or psychological upheaval. What we do really matters. We **"touch" the lives of so many couples**, affecting their journeys in many ways. There are many contributions we can make in our daily relationship with them that may seem small, but make a huge difference: treating them with empathy and kindness, always remaining positive and respectful, taking the time to listen to them, maintaining a healthy sense of humour and not forgetting the smile on our face.

Although in some cases patients may have some knowledge of the reproductive treatment that awaits them, it is essential that we go through the procedure thoroughly with them. We must adapt to their needs, interests and concerns so that the learning process is carried out optimally. We must provide all the necessary information, trying to use clear and understandable language, avoiding overly technical terms, adopting an attitude of active listening and making sure that they have understood what we have explained. In addition, we must work together to **produce graphic materials** with information that is simple and understandable for them.

This is why it is so important to acquire good **communication techniques** (verbal and non-verbal) that help us to use the most effective messages and channels depending on the situation, always bearing in mind that appropriate behaviour in one situation may be inappropriate in another.

Professionals working in the field of assisted reproduction must also be prepared to face and

support couples through the potential grief generated by failed treatments, so we can help them effectively overcome these difficult times and counteract the feelings of guilt that may arise as a result. One of the most difficult and stressful day-to-day experiences for professionals is when they have to **discuss a negative pregnancy test result**. It is a very emotional moment where we must show maximum empathy to our patients, making sure they feel it. It is of course a sad situation, but it should serve as a catalyst to help them get back on their feet by opening the door to a new plan for the future.

In our relationship with patients, we must recognise that their **emotions, attitudes and expectations** are important in how they respond to assisted reproduction treatments; just as important are the emotions, attitudes, approaches and expectations that each professional has as a caregiver. We often see that what we say or do is equally as important as **how we go about saying or doing it**.

And always bear in mind that the future of assisted reproduction techniques as clinical procedures ***depends on their acceptability, their feasibility*** *in different legal and cultural contexts, their* ***funding*** *and their* ***success rates****, but without comprehensive patient care, they can never be considered a success.*

Dounia Zaari Bendami
***Manager** - UR El Ángel Málaga*

UR AL INJAB

a new Reproductive Unit

BACKED BY THE UR GROUP

In Rabat, the capital of Morocco, a new space is about to open its doors, dedicated to something as important as it is intimate:

HELPING PEOPLE TO START A FAMILY.

The **UR Al Injab Reproduction Clinic** was developed to offer assisted reproduction services in collaboration with Grupo Internacional UR, a company with national and international renown that has over **40 years of experience** in reproductive medicine. The clinic will open this summer with a clear vocation: to make reproductive medicine available to more women and couples, offering support at every stage of the process.

The project is based on a simple but essential idea: that each patient can **experience their treatment with peace of mind**, confidence and the security of being in the hands of a specialised team.

The clinic is located within a modern and open space, with more than **2,000 square metres** distributed over four floors. Each area has been designed to make the treatment journey comfortable, efficient and, above all, humane.

From the initial consultation to the most advanced stages of treatment, everything is designed to accompany the patient in a caring environment. The centre will have a state-of-the-art embryology and andrology laboratory, a cryopreservation room, a surgical block and a recovery area with observation beds, as well as medical consultation and patient care areas.

The collaboration with Grupo Internacional UR International brings a key value: the experience and protocols of a group with a long history in assisted reproduction. This support allows us to offer treatments such as in vitro fertilisation (IVF/ICSI), intrauterine insemination and fertility preservation, always adapted to the needs of each patient and each situation.

The centre also incorporates Grupo UR's own reproductive genetics service, which will optimise treatments, assess risks and increase the chances of achieving a successful pregnancy and producing a healthy baby. Beyond treatment, the team takes a holistic approach to the various factors that can hinder pregnancy.

The centre integrates fields such as gynaecology, endoscopic surgery and reproductive urology, and also treats pathologies such as endometriosis or polycystic ovarian syndrome.

The aim is to accompany the patient from **diagnosis to the end of the process** in a coordinated and continuous manner. The location in Rabat also provides a direct connection to the Grupo UR headquarters in Spain. Daily flights connecting the main Spanish airports allow for **seamless coordination between medical teams**, so that patients can start their treatment in Morocco and, if necessary, continue or finish it in Spain without interruptions in care.

This new centre represents a significant step forward in access to assisted reproduction in Morocco and on the African continent as a whole. Until now, many women have had to travel abroad to access these treatments. This new centre makes **specialised care more available**, reducing barriers and facilitating access to advanced techniques in a closer environment.

Behind this project there is a multidisciplinary team committed not only to medical excellence, but also to compassionate care. Doctors, embryologists, nurses and patient care staff work in a coordinated way to offer attentive, continuous and personalised care.

UR Al Injab is more than just a clinic, it is a place where everyone feels listened to, supported and understood.

BECAUSE STARTING A FAMILY DOESN'T BEGIN WITH TREATMENT: IT BEGINS WITH A DESIRE. AND NOW, THAT DESIRE CAN COME TO LIFE HERE.

Dr. Antonio Urbano
Director of Genetics - UR Group

PGT-A COMPLETE

SEEING THE EMBRYO LIKE NEVER BEFORE

A new level of genetic analysis enables us to see, before transfer, not only whether the embryo has the correct number of chromosomes, but also ***the origin of errors, small submicroscopic alterations and complex structural variations*** *that previously went unnoticed.*

42
SYNDROMES DETECTED

4Mb
MINIMUM RESOLUTION

24
CHROMOSOMES ANALYSED

PGT-A: SELECTING THE HEALTHIEST EMBRYO BEFORE TRANSFER

When an in vitro fertilisation (IVF) cycle is performed, the embryos obtained are genetically very different from each other, although they appear identical under the microscope. The main cause of implantation failure and miscarriage is aneuploidy—the embryo having the wrong number of chromosomes. This occurs in more than half of human embryos, especially as maternal age advances.

Preimplantation genetic testing for aneuploidy (PGT-A) analyses the genetic material of a small sample of cells taken from the embryo at the blastocyst stage, without damaging it, so we can detect these errors before deciding which embryo to transfer. The result: a higher probability of success for each transfer and fewer gestational losses.

WHAT MAKES PGT-A COMPLETE INNOVATIVE?

Conventional PGT-A detects aneuploidies affecting whole chromosomes (such as trisomy 21 or Turner syndrome) with high reliability. However, there are other equally important genetic alterations that could go undetected with this technique. **PGT-A Complete** radically expands what we are able to see in the embryo, incorporating four additional major capabilities:

THE FOUR DIMENSIONS OF PGT-A COMPLETE

1.

HIGH SUBMICROSCOPIC RESOLUTION: detects chromosomal imbalances as small as 4 megabases, fragments that conventional PGT-A cannot identify.

2.

HETEROPLOIDY: identifies embryos with an abnormal number of complete sets of chromosomes, such as triploidy (69 chromosomes instead of 46), which is associated with recurrent miscarriages and molar pregnancies.

3.

42 MICRODELETION AND MICRODUPLICATION SYNDROMES: simultaneous screening for conditions such as DiGeorge, Prader-Willi, Angelman, Williams and 38 other syndromes, which are undetectable with standard screening.

4.

PARENTAL ORIGIN OF THE ANEUPLOIDY: determines whether the chromosomal error comes from the egg (maternal origin) or the sperm (paternal origin), which is key information for guiding future treatment.

HETEROPLOIDY: A SILENT ERROR WITH GREAT IMPACT

Heteroploidy is a disorder where the embryo has an incorrect number of complete sets of chromosomes. The most common form is triploidy: the embryo has three copies of each chromosome (69 in total) instead of the usual two. Although these pregnancies rarely go to term, there can also be late miscarriages or serious complications during pregnancy.

PGT-A Complete also detects other less frequent but relevant heteroploidy patterns, such as uniparental disomy (UPD), where both chromosomes in a pair come from the same parent, and runs of homozygosity (ROHs). Both of these patterns can be associated with hidden recessive diseases. Identifying these embryos protects patients from transfer failures or pregnancies with complications.

42 SYNDROMES: WHEN WHAT IS MISSING IS TOO SMALL TO SEE

Some medical conditions are not caused by having one chromosome too many or too little, but by the loss or duplication of a very small chromosome fragment. These are called microdeletion and microduplication syndromes. Some pregnancies with these syndromes come to term, but the children will likely have intellectual disabilities, heart defects or neurodevelopmental problems. PGT-A Complete simultaneously screens 42 of these syndromes in each embryo tested, at no additional cost.

SOME OF THE MOST COMMON SYNDROMES ARE LISTED BELOW:

22q11.2	DiGeorge syndrome
5p15	Cri du chat syndrome
17p11.2	Smith-Magenis syndrome
15q11-13	Prader-Willi / Angelman syndrome
1p36	1p36 deletion syndrome
11p13	WAGR syndrome
7q11.23	Williams syndrome
4p16.3	Wolf-Hirschhorn syndrome
+ 34 más	Screened for by the analysis

***THIS INFORMATION DOES NOT OBLIGE ANY PARTICULAR DECISION TO BE MADE**: it simply gives medical teams and patients a more complete understanding before a transfer.*

WHERE DOES THE ERROR COME FROM? MATERNAL OR PATERNAL ORIGIN MATTERS

When an aneuploidy is detected in an embryo, it is now possible to determine whether the extra or missing chromosome came from the egg (maternal origin) or the sperm (paternal origin). This information, which conventional PGT-A does not provide, has real clinical value: If the majority of errors are of maternal origin, it may indicate reduced oocyte quality related to age or ovarian factors, guiding the team towards different stimulation strategies, egg donation or ovarian reserve research. However, if there are more paternal errors, this may suggest a disturbance in sperm meiosis and prompt further study of the semen sample.

IN SHORT, KNOWING THE ORIGIN TRANSFORMS THE GENETIC ANALYSIS OF THE EMBRYO INTO A REPRODUCTIVE DIAGNOSIS TOOL FOR THE COUPLE.

PGT-A STANDARD VS. PGT-A COMPLETE

PGT-A Standard	*PGT-A Complete | New*
✓ Detects aneuploidies in entire chromosome	✓ Detects aneuploidies in entire chromosome
✓ Analyses 24 chromosomes	✓ Analyses 24 chromosomes
✗ Does not detect fragments < 5-10 Mb	✓ High resolution: detects fragments as low as 4 Mb
✗ Does not identify complex heteroploidy (ROH, UPD)	✓ Identifies triploidy, ROH and UPD
✗ Does not detect microdeletion/ microduplication syndromes	✓ Simultaneous screening for 42 syndromes
✗ Does not determine the parental origin of the error	✓ Determines maternal or paternal origin of the error

Basic glossary

TERMS TO KNOW:

- ANEUPLOIDY: Número anormal de cromosomas en una célula (más o menos de 46).
- TRIPLOIDY: Embryo with 69 chromosomes: three copies of each. Associated with miscarriage and severe pregnancy complications.
- MICRODELETION: Loss of a very small chromosome fragment, undetectable by conventional karyotyping but causes specific syndromes.
- UPD (UNIPARENTAL DISOMY): A condition in which both chromosomes in a pair are inherited from the same parent, which can trigger genetic diseases associated with imprinting.
- ROH (RUNS OF HOMOZYGOSITY): Regions of the genome with low variability, associated with an increased risk of recessively inherited diseases.
- BLASTOCYST: Embryonic stage at 5-6 days of development that is the optimal time to perform a genetic biopsy without damaging the embryo.

In summary

MORE INFORMATION, BETTER DECISIONS

PGT-A Complete is not simply a "more expensive" version of the usual genetic test. It is a **qualitatively different tool** that increases the number and type of alterations detectable in the embryo, offering a much more complete genomic picture. For couples undergoing an IVF cycle, especially those with a history of repeated miscarriages, implantation failure or specific risk factors, this **additional information** may be crucial.

If you have any doubts about whether PGT-A Complete is suitable for you, your fertility doctor will be able to give you **personalised guidance**, taking into account your medical history, age and cycle characteristics.

Juan Manuel Moreno
Embryology Coordinator - *UR Group*

The NEW ERA of IN VITRO FERTILISATION

How technology is revolutionising assisted reproduction

THE DEVELOPMENT OF IN VITRO FERTILISATION IN SPAIN HAS POSITIONED THE COUNTRY AT THE FOREFRONT AT A WORLDWIDE LEVEL.

This leadership is also reflected in scientific events such as the biennial **ASEBIR** (Association for the Study of Reproductive Biology) conference, which brings together more than a thousand professionals from the sector and will be held in Alicante for its next edition in 2027.

Organisations such as **ASEBIR** have played a key role in this process, promoting research, training and innovation for more than three decades.

Thanks to this ecosystem, Spain has established itself as a leading destination for international patients seeking assisted reproduction treatments.

In just a decade, in vitro fertilisation has evolved from an effective technique to a **highly accurate process**, where laboratory innovation, genetics, and constant research are increasing the likelihood of success and moving towards a key goal: the birth of a healthy baby.

A DECADE OF DECISIVE CHANGE

Just ten years ago, in vitro fertilisation was already an established technique, but it had significant limitations in terms of control, embryo selection and outcome prediction. Since then, **technology** has transformed every stage of the process. Today we have much more powerful tools that allow us to help patients more effectively. This progress has not occurred in isolation, but as a result of the convergence of various areas: automation, biotechnology, genetics and data analysis. These relevant developments have led to a shift from a more generalist to a highly personalised approach. Each treatment is **tailored to the specific characteristics of each patient**, which significantly increases the likelihood of success.

CRYOPRESERVATION: REPRODUCTIVE FLEXIBILITY

Another major milestone has been the optimisation of freezing and thawing techniques. **Vitrification**, which has replaced earlier, less effective methods, enables us to preserve eggs, sperm and embryos without losing their implantation potential.

Today, the use of frozen samples offers equivalent results to fresh samples, opening up new possibilities such as fertility preservation for pregnancy planning, or embryo banking to increase the likelihood of success. A new dimension of reproductive flexibility has been achieved with this technique.

TIME-LAPSE INCUBATION: OBSERVING CELL DIVISION IN REAL TIME

One of the most striking developments is the incorporation of **incubators with time-lapse technology**. These systems allow continuous monitoring of embryo development without the need to remove the embryos from the culture environment. Before the advent of this technology, embryo observation required the removal of embryos from the incubator at specific times, which involved environmental changes. Now, embryologists can observe each cell division in real time, so they can watch embryonic development unfold before them like a movie.

This monitoring makes it possible to analyse **embryonic kinetics**, i.e. the rate and manner in which each embryo develops. This information is crucial for the selection of embryos with the highest implantation potential. This incubation system represents a paradigm shift: we can now observe the entire process, not just the end result.

THE GENETIC REVOLUTION: SELECTING THE EUPLOID EMBRYO

If there is one area that has marked a before and after in the field of in vitro fertilisation, it is genetics. For years, embryo selection has been based on morphological criteria that did not always reflect the genetic quality of the embryo.

Today, thanks to techniques such as **pre-implantation genetic diagnosis**, it is possible to identify euploid embryos—those with the full number of chromosomes. This development increases implantation rates, reduces the risk of miscarriage, and decreases the likelihood of genetic disease. The aim is no longer simply to achieve pregnancy, but to do everything we can to ensure the birth of a healthy baby.

OPTIMAL QUALITY IN THE LABORATORY

Beyond specific innovations, one of the most important changes has been the **implementation of increasingly rigorous quality systems**. Today's embryology laboratories operate under very strict standards that regulate every stage of the process. From sample handling to environmental conditions, everything follows strict protocols to maximise the chances of success. This holistic approach reinforces the idea that in vitro fertilisation does not depend on just one single breakthrough, but on the sum of multiple coordinated improvements.

RESEARCH: KEY TO ACHIEVING THE ULTIMATE GOAL

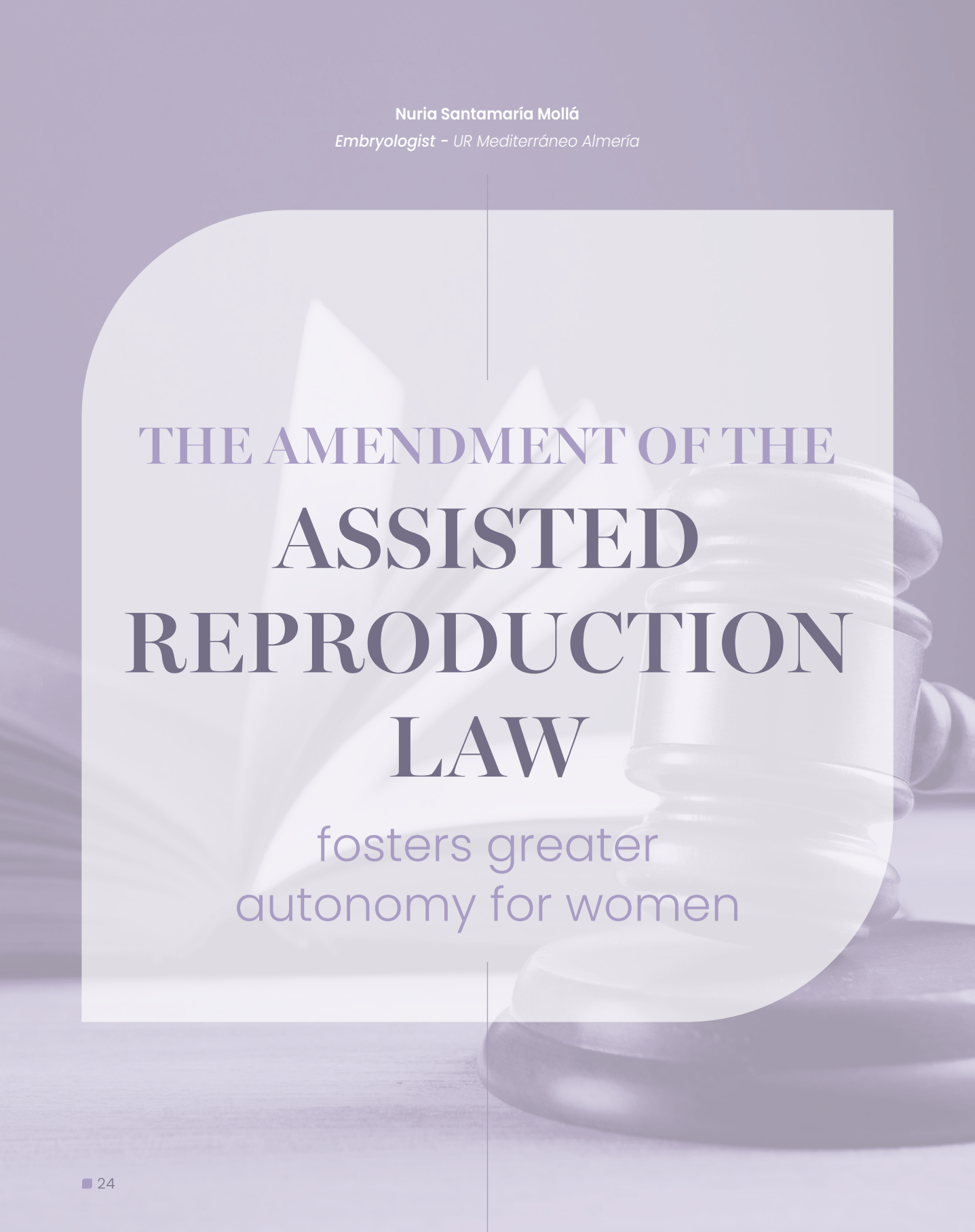
Research continues to provide new criteria that could further improve embryo selection. One of the most recent is the study of so-called **cytoplasmic threads**, or the new lines of research focused on male reproductive functions, with one notable example being microfluidic devices that are designed to select spermatozoa with better functional characteristics. Each new finding, however small it may seem, can help to improve results and bring us closer to the final goal. Nevertheless, it is remarkable to note that, beyond the technology, in vitro fertilisation continues to have a profoundly human dimension. Behind every advance there are stories, expectations and life projects.

The challenge of reproductive medicine is not only technical, but also ethical and social: **TO ACCOMPANY PEOPLE THROUGH ONE OF THE MOST IMPORTANT STAGES OF THEIR LIVES WITH THE UTMOST SCIENTIFIC RIGOUR AND THE GREATEST POSSIBLE SENSITIVITY.**

Nuria Santamaría Mollá
***Embryologist** - UR Mediterráneo Almería*

THE AMENDMENT OF THE ASSISTED REPRODUCTION LAW

fosters greater autonomy for women



Assisted reproduction is now an integral part of both public and private healthcare systems.

According to the latest data from the **Spanish Fertility Society**, approximately 198,000 assisted reproduction treatments were carried out in 2022, and in 2023 nearly **40,000 births** resulted from these techniques, accounting for about 12% of all births.

In this context, the first step has been taken toward amending the **Assisted Reproduction Law**, with a view to legally equating oocyte cryopreservation with sperm cryopreservation.

In Spain, both gametes (oocytes and sperm) and embryos can be **cryopreserved for years**, particularly when the aim is to preserve fertility. This only requires the **periodic renewal of storage** and the payment of associated maintenance costs, as established by the clinic where the gametes are cryopreserved.

Furthermore, current legislation sets forth the possible purpose for cryopreserved samples, which are:

- FOR THE COUPLE'S OWN USE.
- DONATION TO OTHER COUPLES OR TO RESEARCH IF THE REQUIREMENTS ESTABLISHED BY THE AFOREMENTIONED LAW ARE MET.
- CESSATION OF CONSERVATION WITH NO ALTERNATIVE USE

Although the criteria for preserving samples and the possible uses thereof are the same for gametes and embryos, this is not the case when it comes to **cessation of storage**, as men may freely request the destruction of their semen samples by signing a consent form. However, if a woman wishes to discontinue the preservation of her oocytes, she must obtain the opinion of two independent physicians certifying that she does not meet the necessary clinical conditions to undergo treatment or achieve pregnancy.

This is because, at present, oocytes are legally treated in the same way as **embryos** rather than sperm, limiting a patient's autonomy over decisions about her fertility, an imbalance this reform seeks to correct.

The proposed law seeks to place **oocytes** on the same legal footing as **semen**, allowing women to freely decide how long to preserve their oocytes and to request the destruction thereof at any time without requiring external reports.

This is also significant because, beyond increasing patient autonomy, it could help address the growing issue of large numbers of oocytes stored in assisted reproduction clinics. With the rise in fertility preservation procedures in our country, these centres are accumulating **increasing quantities of embryos and oocytes.** In many cases, the options provided for by law are difficult to implement, leading some patients to effectively "abandon" their cryopreserved samples, leaving them in a legal grey area and stored indefinitely.

IT SHOULD BE NOTED THAT THIS AMENDMENT HAS ONLY JUST BEGUN ITS PARLIAMENTARY PROCESS, AND WILL NEED TO BE APPROVED BY THE SENATE AND PUBLISHED IN THE OFFICIAL STATE GAZETTE (BOE) BEFORE IT CAN ENTER INTO FORCE.

Dr. Miguel Barea Gómez
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The impact of ENDOMETRIOSIS on fertility

*Endometriosis is a chronic, often debilitating gynaecological condition that affects approximately **one in ten women of reproductive age**. In Spain, an estimated 2.5 million women are living with this condition.*

This condition, which can significantly affect patients' quality of life and personal development, occurs when tissue similar to the endometrium, the lining of the uterus, grows outside it, triggering a chronic inflammatory response. It can cause pain, irregular menstrual cycles, inflammation, and, in many cases, fertility problems.

There is growing public interest in this disease due to its high prevalence. It is estimated to affect between **3% and 10% of the general population**, with a peak incidence between the ages of 25 and 35, and it is found in **30-50% of patients with infertility.**

It is often diagnosed during infertility assessments.

WHY CAN ENDOMETRIOSIS AFFECT FERTILITY?

Endometriosis can interfere with the normal functioning of the reproductive system in several ways:

1. ADHESIONS OR SCAR TISSUE: that can obstruct the meeting between the egg and the sperm.
2. IMPACT ON EGG QUALITY: endometriosis may impair ovarian function and reduce egg quality.
3. INFLAMMATORY ENVIRONMENT: endometriosis can create inflammation in the uterus that reduces endometrial receptivity and lowers the likelihood of embryo implantation.
4. OVARIAN CYSTS (ENDOMETRIOMAS) may affect ovarian reserve because of their size or location. Because of the multiple, recurrent lesions and the relatively high rate of repeated ovarian surgeries, endometriosis increases the risk of damage to the ovarian follicular reserve.

DOES HAVING ENDOMETRIOSIS MEAN I WON'T BE ABLE TO HAVE CHILDRENE?

NO. Having endometriosis does not necessarily mean infertility. Many women with this condition are still able to conceive spontaneously. Furthermore, advances in reproductive medicine have led to effective strategies that can help achieve pregnancy.

WHAT TREATMENT OPTIONS DO I HAVE IF I HAVE ENDOMETRIOSIS AND WANT TO GET PREGNANT?

They depend on different factors:

AGE
SEVERITY OF THE DISEASE
DURATION OF ATTEMPTS TO CONCEIVE
OVARIAN RESERVE
PRESENCE OF OTHER INFERTILITY FACTORS

OPTIONS WHEN PREGNANCY DOESN'T OCCUR

Grupo UR's reproductive specialists can recommend various strategies:

A. In some cases, straightforward treatments such as **artificial insemination** may be used, particularly when the disease is mild and there are no other contributing factors.

B. In other cases, **the most effective option may be in vitro fertilization (IVF)**. This treatment involves fertilising the eggs in the laboratory and then transferring the resulting embryo into the uterus, bypassing some of the pelvic obstacles that the condition can create.

C. Furthermore, for certain patients, especially young women with ovarian endometriosis, **fertility preservation** through egg freezing may be considered to help protect future reproductive options.

D. The objective is always to identify the most appropriate **strategy for each woman,** based on her individual circumstances and reproductive goals.

LIFESTYLE HABITS THAT CAN HELP:

Although diet and lifestyle changes cannot cure endometriosis, certain habits may help reduce inflammation and improve overall well-being. Common recommendations include:

- Following a **balanced diet rich in fruits, vegetables, fibre and omega-3 fatty acids.**
- Reducing consumption of **ultra-processed foods, sugars and trans fats.**
- Doing **regular physical activity** can help reduce pain and improve mood.
- Getting enough sleep and managing stress.
- Some patients also benefit from complementary approaches such as **pelvic floor physiotherapy or psychological support**, particularly when the pain is ongoing.

IF I HAVE ENDOMETRIOSIS, WILL I ALWAYS NEED TO GO THROUGH ASSISTED REPRODUCTION?

Not necessarily, many women conceive naturally. However, when difficulties occur, fertility treatments can improve the chances of success.

DOES SURGERY CURE ENDOMETRIOSIS?

It can help remove lesions or cysts and improve symptoms in some patients, but it is important to remember that it is a chronic condition that requires ongoing medical follow-up.

IS EGG FREEZING ADVISABLE?

The decision is made together with the reproductive specialist after all relevant factors have been assessed, although it is often recommended for young patients with ovarian involvement who require surgery.

THE IMPORTANCE OF GETTING CHECKED OUT IN TIME

One of the most important considerations regarding endometriosis and fertility is **not to delay seeking medical advice** when symptoms appear or when there are difficulties conceiving.

Grupo UR has a specialised team that takes a multidisciplinary approach, combining pain management, treatment of the condition, and reproductive counselling, so we can offer solutions tailored to each individual case, **accompanying you every step of the way**, as this is a core part of our commitment to your health and well-being. Together, we can make a meaningful difference by improving disease management and helping you plan your reproductive future with greater information and clarity.

Dr. Rocío Núñez Calonge
Scientific Coordinator - UR Group

CHOOSING THE "BEST BABY"?

Striking promises and questions surrounding the genetic selection of embryos

Advertising for new tests promises healthier children, but experts caution about their scientific limitations, the ethical dilemmas they raise, and their potential social consequences.

Recently, advertisements have appeared on social media and in public spaces, including the New York subway, portraying genetic selection of embryos as a way to have a "healthier baby" and even a "better baby". Some slogans, such as "Have your best baby" or "genetically optimised", suggest that it is possible to select embryos with **more favourable predictions for traits such as height, intelligence or a lower risk of disease.**

To understand the debate over genetic selection, we need to begin with the basics.

For years, there have been techniques that allow embryos to be analysed before they are transferred during fertility treatments. Its original purpose **is medical**: to help families affected by serious hereditary diseases by preventing them from being passed on to their children. In these cases, specific genetic mutations can be identified, and embryos without them can be selected. This use is **regulated** in many countries.

The problem arises when attempts are made to go even further. Most common diseases, such as diabetes, heart disease, or many cancers, are not caused by a single gene, but by a complex interplay of multiple genes, lifestyle, environment and chance. To estimate risks in these cases, methods have been developed that calculate probabilities using multiple genetic variants. These are not diagnoses, but **statistical calculations**.

Most medical associations advise against using these estimates to select embryos, as they still do **not reliably predict an individual's actual risk**, and genetic research continues to have limitations, for instance, in the diversity of the populations studied. Furthermore, in countries such as Spain and the United Kingdom, offering this type of testing in fertility clinics is not permitted.

Even so, some couples turn to services abroad or get private testing from companies such as Orchid Health, Herasight, Heliospect or Genomic Prediction. These companies offer **genetic screening** of embryos that estimates the risk of developing certain diseases and, in theory, allows for the selection of embryos for implantation based on **health probabilities**, physical traits or other characteristics. Although it may sound futuristic and reassuring, experts warn of the risks involved.

The first is they create false expectations. **No test can guarantee that a child will be born healthy**. Health depends on too many factors to be based on a simple genetic calculation. If the technology is presented as virtually infallible, some families may make complex medical decisions based on a false sense of certainty. There is also a psychological effect, **the sense that parents can fully control their child's future**. Having children always involves a sense of uncertainty, and that illusion of control can lead to anxiety or guilt if problems arise.

This is compounded by the ethical debate. Talking about "selecting embryos" can suggest that some lives are more valuable than others, and may foster discriminatory attitudes towards people with illnesses or disabilities. Furthermore, these services are extremely expensive, and if they were to become more widespread, they could deepen social inequalities even before birth.

The medical community is particularly concerned about the advertising of these techniques, as it often **oversimplifies them and downplays their limitations**. When presented as just another product on the market, highly complex medical and personal decisions risk being nothing more than a simple purchase. That is why many specialists are calling for caution, stricter regulation, and thorough genetic counselling before these practices become widespread. Ultimately, the question is not only whether technology makes it possible, but something deeper: **whether it should be done, and under what conditions**.

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