HELPING COUPLES..

..BECOME PARENTS

UniversitätsSpital
Zürich

Welcome to the Fertility Centre of the University Hospital Zurich

At the „Kinderwunschzentrum“, you are our top priority! Our most important aim is to help you fulfil your dream of having a family, and to offer you our full and comprehensive care and support throughout your treatment.

The University Hospital Zurich is a centre pioneering fertility treatments, with several new techniques having been carried out successfully for the first time here in Switzerland. Thus, we can draw on over 20 years of experience.

Our constant efforts to improve quality, not only in the area of clinical expertise but also in patient care and support, have resulted in our fertility centre being awarded DIN EN ISO 9001:2008 certification.

This brochure is designed to provide you with the knowledge and information you need in order to actively participate in the planning of your fertility treatment. In this way, we can work together to find the best, individually customised treatment for your needs. It is normal that you will have many questions and also fears and concerns. Please feel free to discuss these openly with us. Such open communication helps to create the relaxed atmosphere which we know contributes significantly to the success of your treatment.

Thank you for the trust you have placed in us. We will do everything possible to provide you with the best available support towards fulfilment of your desire to have a child.

B. Imthurn

Prof. Dr. Bruno Imthurn
Director
Fertility Centre
University Hospital Zurich

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Introduction

Involuntary childlessness – a condition recognised by the World Health Organisation (WHO) – can place a massive strain on a couple. Nowadays, many fertility problems can be overcome as a result of medical advances.

It is important to us that you are extensively informed about your proposed treatment. For this reason, we have created this brochure, which we hope will complement detailed discussions with centre staff to allow you to evaluate and judge the processes involved and the chances of success, but also the risks and financial burden of fertility treatment. This not only creates a solid foundation for your decision but also increases the chances of success and reduces the stress of treatment.

We hope that this brochure will answer most of your questions. For further information, please contact us to make an appointment (phone: 044 255 50 07; email: endo@usz.ch). We would also like to invite you to attend one of our regular information events. Details can be found on our website (www.repro-endo.usz.ch) in the section "Patienten & Besucher" (Patients and visitors).

Human Reproduction

Every four weeks, under the influence of female sexual hormones, an ovum matures in the ovary of a sexually mature woman. The ovum is in an egg follicle, which ruptures (ovulation) about 14 days after the start of menstruation, releasing the fertilizable ovum into the fallopian tube.

The growing follicle produces hormones (including oestrogens, e.g. estradiol). These affect the growth of the uterine lining as well as the opening of the neck of the womb (cervix) to make it easier for semen (sperm) to penetrate into the cavity of the uterus (Fig. 1).

After ovulation, fertilization – the fusing of the mother's and father's genetic traits – can take place in the fallopian tube if fertile semen is present following sexual intercourse (Fig. 1). Human growth begins with the division of cells. Within 4 - 5 days the embryo migrates into the cavity of the uterus, where it imbeds into the lining.

The early embryo sends hormonal signals (e.g. hCG) to the mother, resulting in maintenance of the corpus luteum (which is formed in the ovary after ovulation) for 3 - 4 months. Hormones (e.g. progesterone) formed, -produced by the corpus luteum maintain the pregnancy until the developing child can take over all the required regulations itself via the placenta.

Involuntary Childlessness

Involuntary childlessness is a frequently occurring problem. It is estimated that about 10 - 15% of all couples are involuntarily childless.

Infertility can be traced back to different causes. Examples of specific problems include:

for the woman:

- Missing, blocked or damaged fallopian tubes
- Hormonal defects affecting ovum maturation
- Endometriosis

for the man:

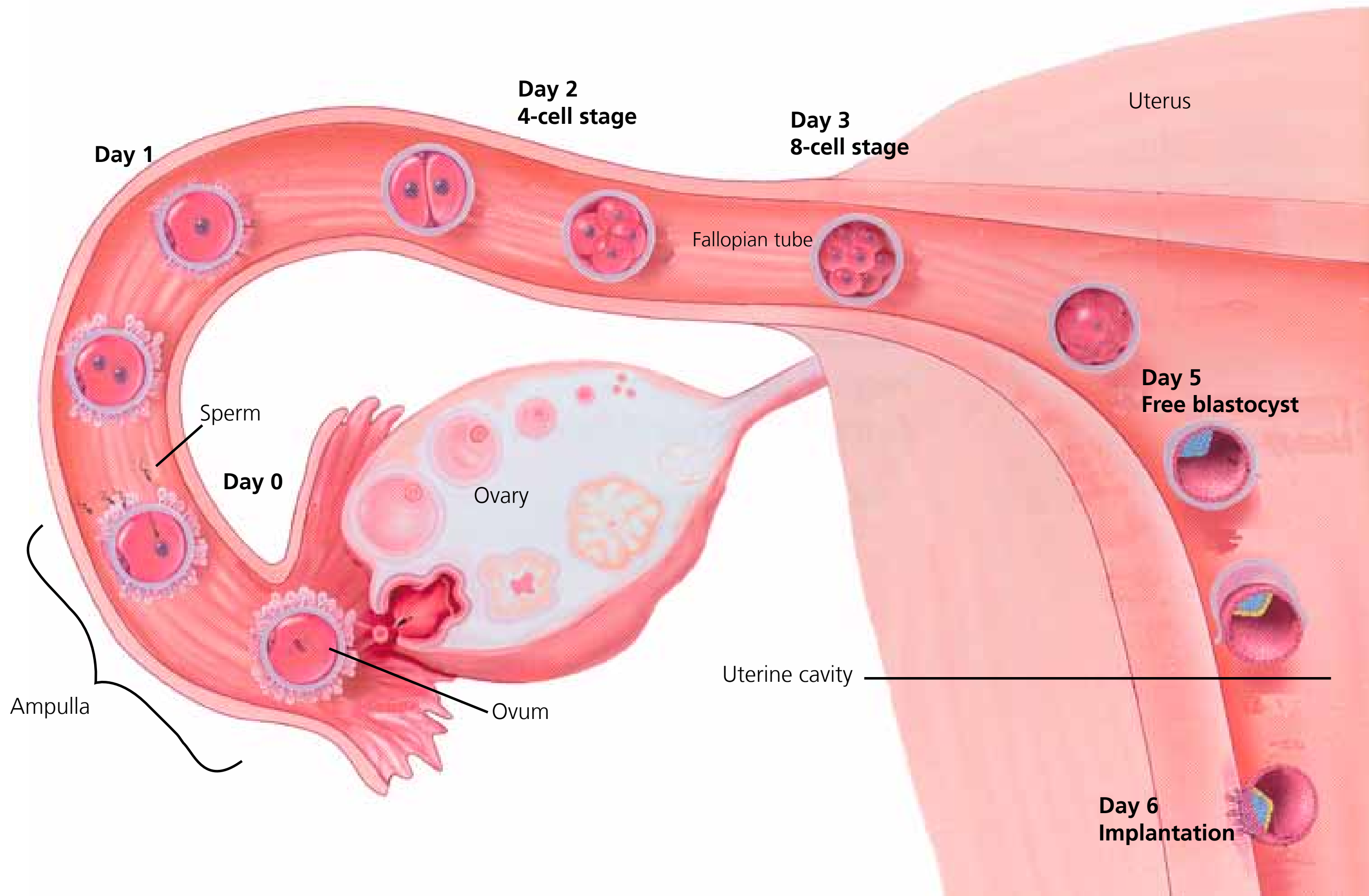
- Poor semen quality, e.g. too few sperm, insufficient mobility or too few normally shaped sperm

Alongside specific problems with the woman or the man, stress, smoking, being underweight or overweight, as well as age can all reduce the chances of conceiving a child.

Cases where no reason for childlessness can be found in either the man or the woman are called unexplained infertility.

People approach involuntary childlessness in different ways: childlessness can be accepted or an adoption process entered into. Medical help can however be sought. In particular, women aged 37 or older seeking medical support should do so without delay. The following sections describe the various medical treatments that are now available to help childless couples.

Fig. 1: Fertilization in the ampulla (= outer end) of the fallopian tube with migration of the fertilized ovum through the fallopian tube. On the day 5 the free blastocyst reaches the cavity of the uterus. Implantation in the uterus happens on the day 6 after fertilization.



In Vitro Fertilization (IVF)

Reasons for carrying out IVF

Any planned IVF treatment is always discussed in detail via personal consultation with a specialist senior physician. If required we can also put you in contact with independent information and advice centres.

Before describing the details of the IVF process, some background information on why this method might be chosen, and the necessary pre-conditions for treatment are outlined here.

Reasons for carrying out IVF include:

1. **Blocked, damaged or missing fallopian tubes.**
2. **Unexplained infertility** (if all other possible treatments have not led to a pregnancy).
3. **Inadequate semen quality.** Under these circumstances, ICSI treatment is usually chosen (see page 13).

Fertility declines in both men and women with increasing age. In women, the probability of pregnancy decreases steadily after the age of 35 and the risk of a miscarriage increases. Therefore we conduct IVF treatment after the age of 40 in only the most promising cases. In addition, in such situations we recommend a polar body analysis (see page 14).

Pre-conditions

Before fertility treatment can be started, different diagnostic tests must be carried out. Amongst these are:

for the woman:
- Hormonal tests
- Assessment of any blockage of the fallopian tubes, as well as the shape and size of the uterus
- Examination for infection

for the man:
- Extensive examination of sperm
- Examination for infection

Depending on each individual case, further examinations may need to be carried out before treatment.

To help cope with the stress and strain associated with IVF, we can offer specialised **psychological counselling** from a specially trained gynaecologist belonging to our team (see page 15). Alternatively, a specialist in **traditional Chinese medicine** (TCM) is available. These supporting measures can additionally improve the chances of pregnancy.

Due to the complexity of the treatment it is necessary that you (both partners) have a good knowledge of at least one of the languages used by us (Swiss national languages or English).

According to Swiss legislation (Fortpflanzungsmedizingesetz; FMedG – Reproductive Medicine Act) we can carry out IVF only for heterosexual couples who are living in a stable relationship.

Organisation and costs of IVF treatment

When a treatment cycle is agreed, you should contact the outpatient clinic (Poliklinik) by phone 1 or 2 (at the very latest 3) days after menstrual bleeding has started. Any remaining questions can be answered then.

To carry out the treatment we need the form **"Informed Consent"** jointly signed by both partners as well as a signed agreement regarding the **"Preservation of Fertilized Ova"** if desired. The corresponding forms will be distributed to you in good time.

You should reckon with costs of approx. CHF 3,500 per treatment cycle for IVF at the University Hospital Zurich. A treatment cycle includes carrying out and monitoring hormone therapy (stimulation), the retrieval of ova (aspiration), the cultivation of ovum and embryos (laboratory) as well as the replacement of embryos into the uterus (transfer). The cost of freezing and preservation of fertilized ova is included.

Additional costs arise through the type and amount of hormones necessary for stimulation, which can fluctuate between CHF 500 and CHF 2,500. We will gladly discuss differences between products with you before the start of treatment.

Important! None of these costs are covered by health insurance companies and thus must be met by yourselves.

If you have any questions about your treatment, please, contact our fertility centre:

Monday to Friday
(except Thursday afternoon)

09.00 - 12.00 and 13.00 - 15.30

Telephone: 044 255 50 07
Email: endo@usz.ch

Stimulation of ovaries

Before starting hormone treatment, the ovaries are checked with an ultrasound scan to rule out the presence of cysts. Normally, there then follows a 2- to 3-week pre-treatment with a derivative of an ovarian hormone (Primolut-N®-Tbl.). This is followed by ovarian stimulation (Fig. 2) - a treatment lasting 10 - 13 days in which natural hormones (commercially available FSH from different producers) individually tailored to each patient are administered in the form of daily injections to encourage the growth and maturation of many ova.

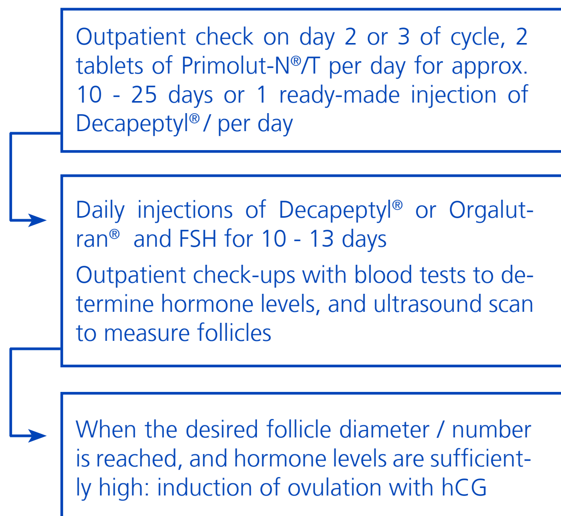


Fig. 2: Process of stimulation of ovaries

In order to prevent the body's own hormones from disrupting the stimulation, a derivative of another hormone, a so-called GnRH-Agonist (e.g. Decapeptyl®) or GnRH-Antagonist (e.g. Orgalutran®), is given at the same time.

The type of stimulation can vary from case to case. For example, injections of Decapeptyl® are often used instead of Primolut-N® tablets in the pre-treatment stage.

The pre-treatment and first phase of stimulation can be carried out by yourself at home or by your GP. From the day 8 of stimulation (always a Friday) onwards, we carry out the necessary hormone analysis and ultrasound scans here at the Fertility Centre.

The hormone levels measured in the blood determine the dose of drugs administered. Ultrasound scans are used to check the development of the egg follicles. In this way, we are able to determine the best time to retrieve mature fertilizable ova.

When the hormone and ultrasound scan findings have reached the required stage (usually the day 10 or 11 of stimulation), final ovum maturation and ovulation is induced with an injection of the hormone hCG (e.g. Ovitrelle®). Two days later we carry out follicle aspiration to retrieve the ova.

Ovum retrieval

Follicle aspiration to retrieve the ovum is an outpatient procedure carried out by means of an ultrasound scan through the vagina (transvaginal). The procedure lasts 10 - 15 minutes, and often no anaesthetic is needed. If desired, however, or depending on the position of the ovaries, an anaesthetic can be required. You will be discharged from the clinic on the same day, 2 - 4 hours after the procedure. Because of the drugs used you should not drive a vehicle under any circumstances on the day of the procedure.

The follicle is aspirated along an ultrasound-guided vaginal probe in the operating theatre (Fig. 3). The patient is „nil-by-mouth" so that if a problem arises a laparoscopy or an abdominal laparotomy can be carried out. For this reason, the procedure is always carried out in so-called „readiness for anaesthesia".

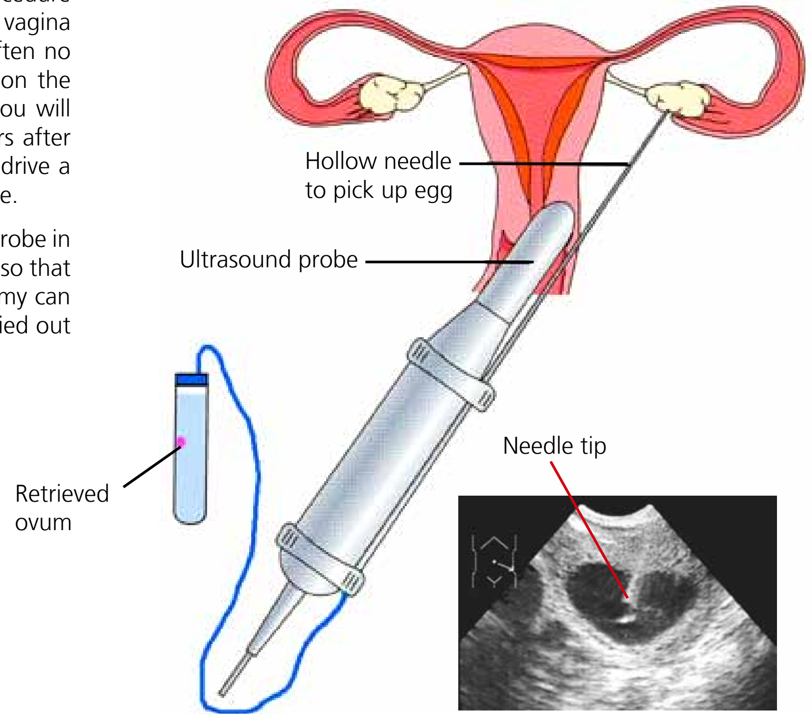


Fig. 3: Transvaginal follicle aspiration guided by ultrasound scan

Insemination

Immediately after follicle aspiration, a biologist carries out an examination in the laboratory directly next to the operating theatre to see whether ova are present in the retrieved follicular fluid (Fig. 4).

After ovum extraction, the retrieved sperm are prepared in the laboratory (sperm preparation). During this process immobile sperm and infectious agents are removed. The prepared sperm are added to the ova 3 - 6 hours later. For insemination, 100,000 motile sperm are used per ovum.

Cultivation

The ova are cultivated for 2 - 3 days in an incubator under precisely determined conditions. The ovum is first checked under the microscope 16 - 18 hours after insemination (Fig. 5). After 40 - 64 hours, a second check of the embryos (now at the 2 - 8 cell stage) is performed. Afterwards, embryo transfer can take place.

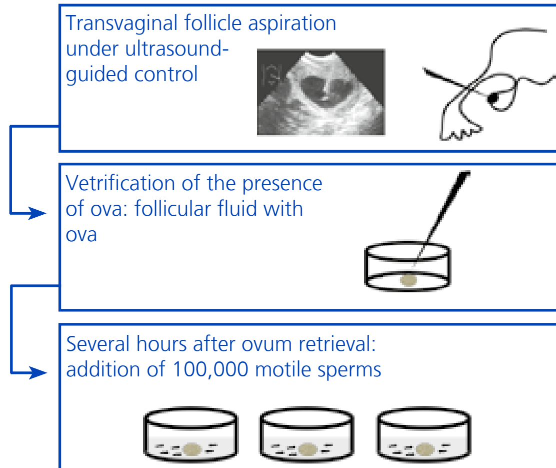


Fig. 4: In vitro fertilization process; step 1

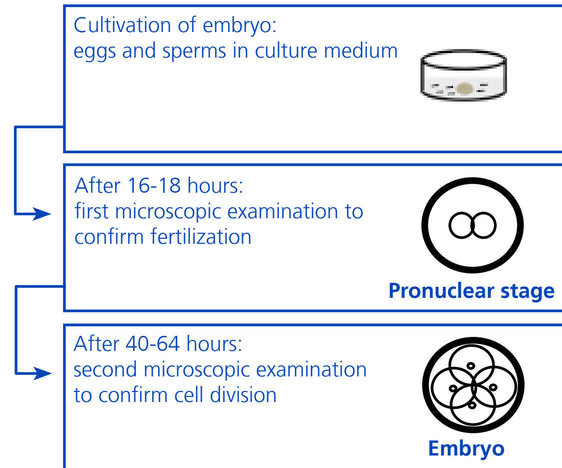


Fig. 5: In vitro fertilization process; step 2

Embryo transfer (ET)

The embryos are transferred into the uterus painlessly in a tiny amount of culture medium with a fine flexible transfer catheter. We usually transfer 1 - 2 embryos at one time. Afterwards the patient rests for a while. In 90 - 95% of all treated patients, embryo transfer takes place.

Luteal phase

To prepare the uterine lining optimally for pregnancy, the patient receives the natural luteal hormone progesterone from the day of aspiration. This hormone is applied in the form of vaginal suppositories or vaginal cream, which must be used daily at least until the pregnancy test or beyond (in the case of a positive test indicating a pregnancy).

Cryopreservation of Fertilized Ova

If, during the course of the current treatment, several fertilized eggs are produced (see also Fig. 5), as a rule 1 - 2 embryos are transferred after further cultivation. According to the Swiss Reproductive Medicine Act, the remaining fertilized ova can be frozen and preserved for a maximum of 5 years.

If necessary, in a later cycle, these frozen eggs can be thawed out and transferred to the uterus after in vitro development to 2 - 8 cell embryos. This process reduces the risk of multiple births and offers a second chance at achieving a pregnancy without the need to undergo another stressful round of hormonal stimulation and follicle aspiration.

For transfer of thawed fertilized eggs, we use the natural spontaneous cycle with regular menstruation. The optimal transfer time is determined from hormone measurements and ultrasound scans.

Cryopreservation of fertilized ova happens only with the consent of the couple. The exact terms are laid out in a separate agreement.

Intracytoplasmic Sperm Injection (ICSI)

ICSI is a particular method of insemination that can be used in cases where there are severely altered spermiogram findings that cannot be treated successfully or at all by other methods. ICSI can also be used in cases of so-called unexplained infertility and if fertilization could not be achieved with IVF. ICSI is only used after preliminary examination of the man by a specialist.

ICSI represents a further development of IVF. Accordingly, the stimulation of the ovaries, retrieval of the ovum, cultivation of embryos and embryo transfer are all the same as with IVF (see pages 7-12).

ICSI differs from IVF (see page 11 and Fig. 6a) in that, with ICSI, the ovum is inseminated under the microscope. This involves injecting 1 sperm directly into the ovum using a very fine glass pipette (Fig. 6b).

Fertilization and pregnancy can be achieved with ICSI even in the cases of extremely low sperm count.

MESA and TESE

The sperm required for ICSI usually comes from the ejaculate. If no sperm can be detected in the ejaculate then sperm can, in many cases, be retrieved by an operative procedure from the epididymis (MESA) or from the testes (TESE) by a specialist urologist.

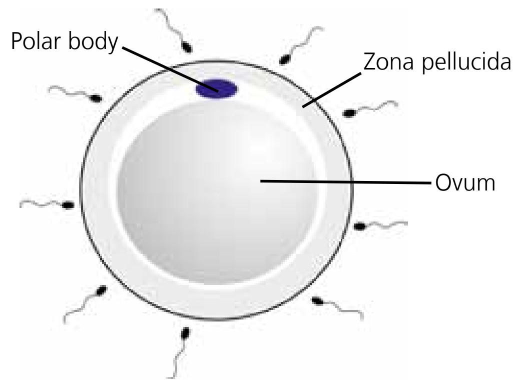


Fig. 6a: Insemination for IVF

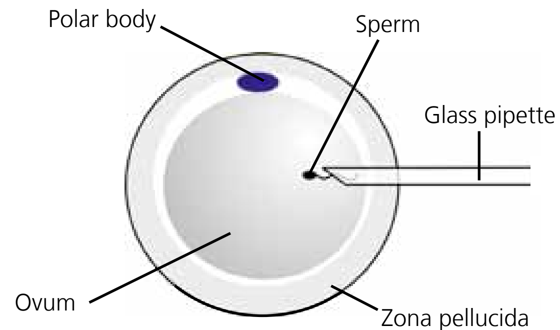


Fig. 6b: Insemination for ICSI

Polar Body Diagnosis (PBD)

Polar body diagnosis (PBD) combines the most modern techniques in reproductive medicine with the newest possibilities offered by genetic diagnostics.

Polar bodies are cellular parts expulsed by the ovum from which information on the genetic composition of the ovum can be extracted. The aim of PBD is to detect serious incurable genetic defects in the ovum. In this process the polar bodies of the ovum are extracted and examined genetically.

Application of PBD can achieve the following:

- Prevention of the transfer of serious, familial, non-curable genetic disorders.
- Enhancement of the probability of pregnancy from IVF/ ICSI treatment in certain cases (e.g. women over 37 years of age).
- A reduction in the risk of miscarriage (e.g. with recurring miscarriages).

If PBD is used to prevent the transfer of serious, familial, non-curable disorders, advice and consultation on human genetics must take place before treatment. In addition, we recommend psychological advice and support. In spite of the application of PBD, we also advise chorionic villus sampling or amniocentesis when embarking on a pregnancy as, even with the most careful approach, misdiagnosis can occur.

PBD is a very new method that has been subject to rapid development. For this reason the use of PBD might prove its value in the future for some applications, but perhaps not for others.

PBD can examine only maternal genetics; paternal genetic make-up cannot be examined in this way. As only individual chromosomes or genes can be targeted, PBD can indeed improve chances or reduce risks (see above) but it does not guarantee a healthy child.

To prevent misdiagnosis and multiple fertilizations, ICSI treatment (see page 13) is always combined with PBD. As with ICSI, health insurance companies will not meet the costs of PBD and additional costs of approximately CHF 2,000 must be reckoned with.

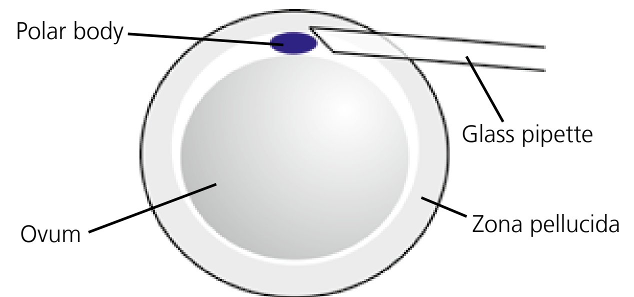


Fig. 7: Extraction of a polar body for polar body diagnosis

Psychological Aspects

For many couples, having a child happens as a matter of course. If, however, the desire for a child is unfulfilled many couples experience the resulting involuntary childlessness as an increasing psychological burden.

Medical support can help many couples to have a child. During the period of medical treatment the affected couple experience huge emotional highs and lows; the disappointment that can result from a lack of success with one round of treatment and the hope that with the next attempt they will be successful makes for an emo-tional roller coaster. Unfortunately, fertility treatment does not always result in the desired child and to start with it is often extremely difficult to imagine a fulfilled life without a child.

The following statements give some examples of the questions and problems that can often arise with involuntary childlessness or treatment:

- Have we done something wrong? It is only us who has this problem!
- How can we cope with involuntary childlessness?
- Only a few of our friends understand our problem!
- Our partnership and sex life is under a lot of strain as a result of childlessness and the treatments we are undergoing for this!
- How can we deal with the punishing waiting and uncertainty after treatment?

Psychological Care

Relaxation techniques: A balance between tension and relaxation is important for our inner wellbeing. Overwhelming stress and strain disturb the natural balance of the body. Relaxation exercises specially tailored for childless couples, autogenic training or progressive muscle relaxation (PMR) can be important methods of support in involuntary childlessness and can also help improve the success of fertility treatment.

Psychological support: One of the gynaecologists in our fertility treatment team has also trained as a physically-oriented psycho- and sexual-therapist, and can offer support on a psychological as well as on a medical level. Such counselling can help reduce the strain of involuntary childlessness as well as the stress of the treatment.

Support groups: Involuntary childlessness support groups allow people to feel that they are not the only ones with this problem. Sharing experiences with other affected couples can help suggest and improve coping strategies.

You can make an appointment for any of the above mentioned support by calling 044 255 50 09 or emailing (endo@usz.ch).

Chances of Success

Early pregnancy can be recognised by detection of a specific hormone in the blood. Therefore we request that you have a blood test to establish whether you are pregnant, either with your GP or here at the clinic approximately 14 days after embryo transfer. Urine pregnancy tests are almost equally reliable nowadays, but have not quite achieved the certainty of a pregnancy blood test. Please, also let us know if you start menstruating at the end of the cycle.

At the University Hospital Zurich Fertility Centre, the clinical pregnancy rate after in vitro fertilization (IVF) and after ICSI is about 40% per cycle. As total treatment can encompass several aspirations (up to a maximum of 6) the total pregnancy rate is naturally higher. Thus, at our centre, in 7 out of 10 cases, we can fulfil a couples' desire for a child.

However, depending on the underlying reasons for childlessness, in some cases the probability of pregnancy can be substantially lower. In such cases, we would advise you against treatment.

Legal Regulations

The University Hospital Zurich Fertility Centre naturally complies strictly with the Swiss Reproductive Medicine Act (FMedG).

Quality Assurance

The Fertility Centre at the University Hospital Zurich strives constantly to improve the quality of the treatment process. As evidence of our success we have been certified according to the quality management system DIN EN ISO 9001:2008.

Furthermore, our fertility centre was a founding member of FIVNAT-CH, the Swiss National IVF data register, which has existed since 1993. The Fertility Centre at the University Hospital Zurich is regularly one of the centres producing the very best pregnancy rates in Switzerland. The correctness of the data produced by us is periodically checked by independent international experts (external audits).

Important Points to Note

Insufficient reaction to stimulation: If the hormone analysis or ultrasound scan shows that no normal maturation has taken place in the current treatment cycle (or that not enough ova have matured) we will not take a follicle aspiration.

Hyperstimulation: Occasionally a hyperstimulation of the ovaries occurs, which in rare cases (1/500 stimulations) manifests itself with lower abdominal pain, nausea and vomiting. These severe cases can be resolved with inpatient care lasting mostly only a few days. However, if a pregnancy results, recovery from the hyperstimulation can take several weeks.

Operative complications: Although it can often be carried out without anaesthetic, follicle aspiration is an operative procedure. In very rare cases it can lead to injury of the abdominal organs or vasculature. In such cases, the abdominal cavity must be opened immediately so as to be able to treat the injury surgically. This complication arises in less than 1 in 1000 aspirations. Therefore, to be prepared for such an emergency, all patients are prepared for anaesthetic even if the follicle aspiration is planned without an anaesthetic.

No pregnancy: Unfortunately, a pregnancy cannot be achieved with every treatment cycle. For example, it is possible that no mature ovum is retrieved, that the ovum is not fertilized or that the ovum does not develop further after fertilization. These problems are not due primarily to the treatment but are a consequence of the generally low fertility of human beings.

Multiple births: The hormonal stimulation used in IVF brings several ova to maturity simultaneously, and it is known that the transfer of several embryos demonstrably increases the probability of pregnancy. Despite precautionary measures, approximately 20% of pregnancies result in twins (very rarely triplets).

Miscarriages: The treatment carries an approx. 5% risk of an ectopic pregnancy, even if only partial fallopian tubes are present. Also, a slightly higher number of miscarriages occur in pregnancies following hormonal stimulation (approx. 20%); however, this higher miscarriage rate is due mainly to the increased age of the mother than to the treatment per se.

Malformations: New investigations show that the birth weight of children from IVF or ICSI is slightly lower than normal. It is also possible that the risk of congenital malformation and the incidence of complications during pregnancy are slightly increased. Again, however, these problems are linked more to the reasons underlying the involuntary childlessness than to the IVF or ICSI treatment.

After ICSI, especially in cases with a severe reduction in sperm quality, specific genetic changes („chromosomal aberrations“) can arise more often. As a result of this we recommend amniocentesis in the case of pregnancy. Furthermore, any resulting male child could have the same fertility problems as his father.

Frequently Asked Questions

How long does the treatment last?

Each IVF treatment cycle (in the strictest sense) with intensive support lasts about 2 weeks. In addition there is the 2 - 4 week pretreatment, during which no visit to the doctor is necessary.

In total, fertility diagnosis and therapy with several examinations and treatment cycles usually encompasses a period of 1 - 2 years, which can represent a huge burden for many couples.

Which costs of IVF treatment are covered by health insurance?

In Switzerland, health insurance companies meet the costs of the diagnosis of involuntary childlessness. However, the costs of IVF and ICSI treatment, which vary from centre to centre, are not covered (also see page 8).

Who will support me?

We place great value on constant care and support. In most cases, you will meet your attending senior physician at your initial consultation. She is responsible not only for your treatment, but also for addressing your concerns and answering your questions. She is supported by an experienced assistant physician and a small competent care team.

Can I also be supported by complementary medicine?

Depending on the cause of childlessness, you can request from us the possibility of using traditional Chinese medicine (TCM). TCM can complement the western medical therapy and thus improve the probability of achieving a successful pregnancy through relaxation and emotional balance.

What are the risks of IVF treatment?

Like all medical treatments, IVF offers not only solutions but also problems. Answers to some of your questions can be found in this brochure under the heading “Important Points to Note”. We will gladly answer any remaining questions in a meeting with you.

Can I continue to work while undergoing IVF treatment?

At the start of treatment, we will arrange your appointments together with you. You will then know 4 - 6 weeks in advance exactly when you need to come to us for check-ups, and how much time this will take. This approach enables you to plan in good time, and therefore usually allows you to carry on working. However, not all appointments can be planned exactly in advance. Therefore, flexible working hours are an advantage.

Glossary

Embryo
Developmental stage of a human being. Lasts from the two-cell stage until the 13th week of pregnancy.

Embryo transfer
Replacement of an embryo into the cavity of the uterus after fertilization outside the body.

Endometriosis
Uterine lining lying outside the cavity of the uterus which can cause scars. Common cause of involuntary childlessness.

Follicle
Egg follicles in the ovary. A follicle contains fluid and an ovum. The larger the follicle, the more mature the ovum inside (follicle with fertilizable ova about 2cm in diameter).

Follicle aspiration
Retrieval of follicular fluid and ova from the ovary.

FSH (Follicle stimulating hormone)
A hormone produced by the pituitary gland that stimulates maturation of ova in the ovary. FSH can be artificially produced and used for the stimulation of ovaries (see also "Stimulation of Ovaries").

Corpus Luteum
Yellow-like remains of the egg follicle after rupture. Produces the hormone progesterone

GnRHa (GnRH-Agonist) / GnRH-Antagonist
Drugs that block the release of the body's own FSH and LH. They prevent the premature induction of ovulation.

HCG (Human Chorion Gonadotropin)
A pregnancy hormone that can be measured in urine or in blood to verify a pregnancy.

Like LH (see below), HCG leads to ovulation. As it is cheaper to produce, hCG is used in fertility treatment instead of LH as a drug to induce ovulation.

ICSI (Intracytoplasmic sperm injection)
Fertilization outside the body where a single sperm cell is injected directly into the ovum.

Insemination
Addition of mobile fertilizable sperm.

IVF (In vitro fertilization)
Fertilization in a Petri dish outside the body. Here, many sperm cells are added to an ovum in a culture medium.

Cryopreservation of fertilized ova (Pronuclear stages)
Freezing and thawing of fertilized ova in liquid nitrogen (–196°C). This procedure reduces the burden of treatment on the woman as well as reducing the risk of multiple births.

LH (Luteinising hormone)
A hormone produced by the pituitary gland that induces ovulation.

MESA (Microsurgical Epididymal Sperm Aspiration)
Microscopically supported operative procedure for extraction of sperm from the epididymis.

Oestrogen
Collective term for female sex hormones that are produced in the ovary and, amongst other functions, support development of the uterine lining.

Stimulation of ovaries
Pituitary gland hormones, mainly FSH, are injected to stimulate the ovary to bring an ovum to maturity. With IVF, higher doses of hormones are used so that several ova mature.

Polar body diagnosis (PBD)
Extraction and genetic examination of a polar body.

Polar body
Cellular matter discharged from an ovum. Contains a chromosomal reflection of the ovum.

Progesterone
Female sex hormone produced in the ovary mainly after ovulation. Progesterone prepares the uterine lining for implantation of the embryo and, in case of pregnancy, prevents the onset of menstruation.

Spermiogram
Examination of semen for number, mobility and shape of sperm. In addition other markers can also be detected.

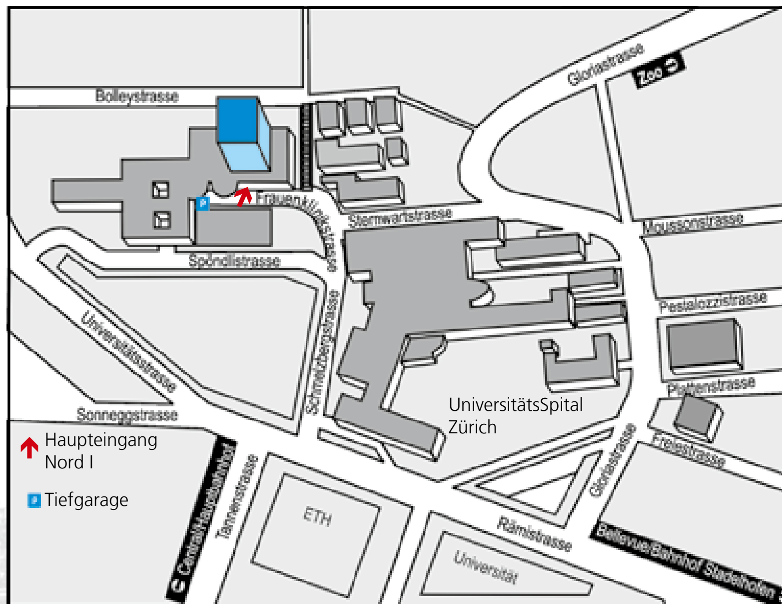
Sterility
No pregnancy after 1 (up to 2) years in spite of regular sexual intercourse. Increasingly, the term "infertility" is used.

TESE (Testicular Sperm Extraction)
Extraction of sperm directly from a small operatively retrieved piece of testes.

Pronuclear stage (fertilized ovum)
The first sign that successful fertilization has taken place. After penetration by sperm cells, ova produce two pronuclei that, before fusing, constitute both the maternal and paternal genetic traits.

Zona pellucida
Transparent skin that encloses the ovum.

Your team at the Fertility Centre, University Hospital Zurich



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