

בס"ד

The ABCs of Treating Infertility

Rabbi Kenneth Brander

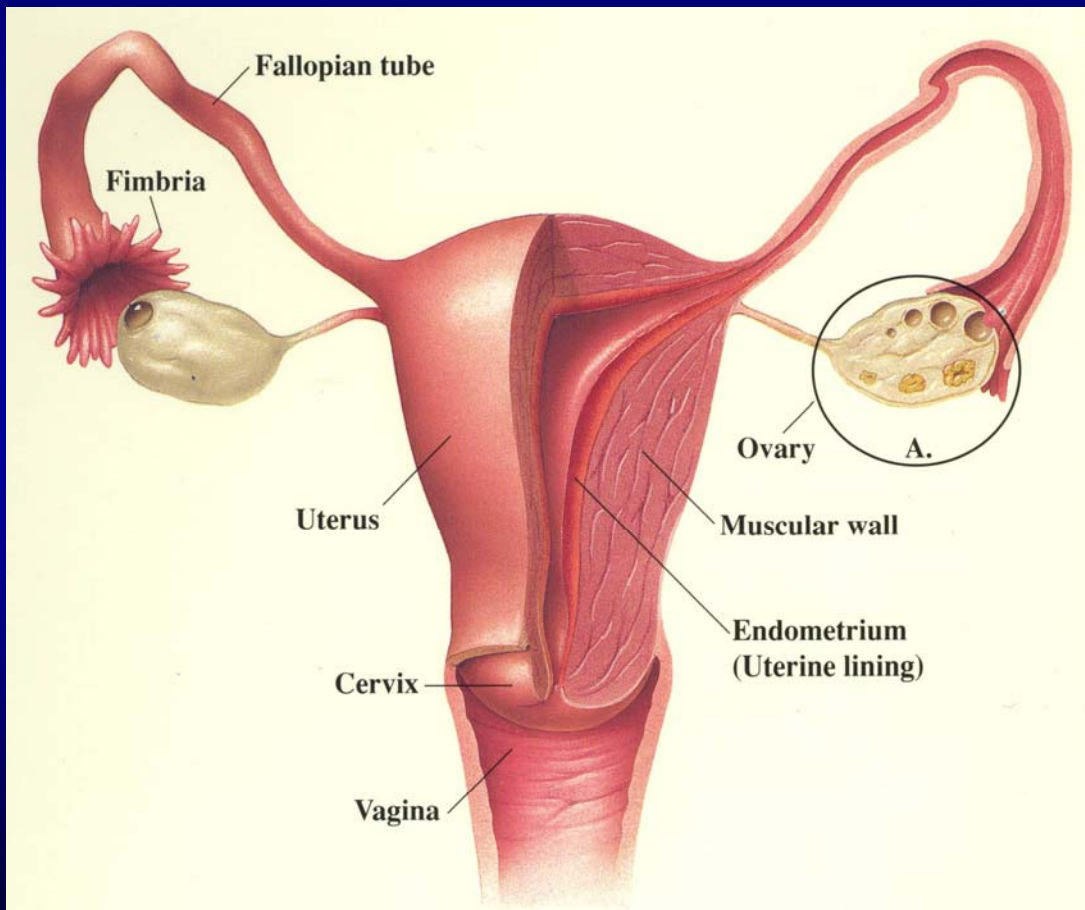
Richard V. Grazi, M.D.

*The Aaron, Martha, Isidore N. and Blanche Rosansky
Contemporary Halakha Program
RIETS, י"א שבט תשס"ט*

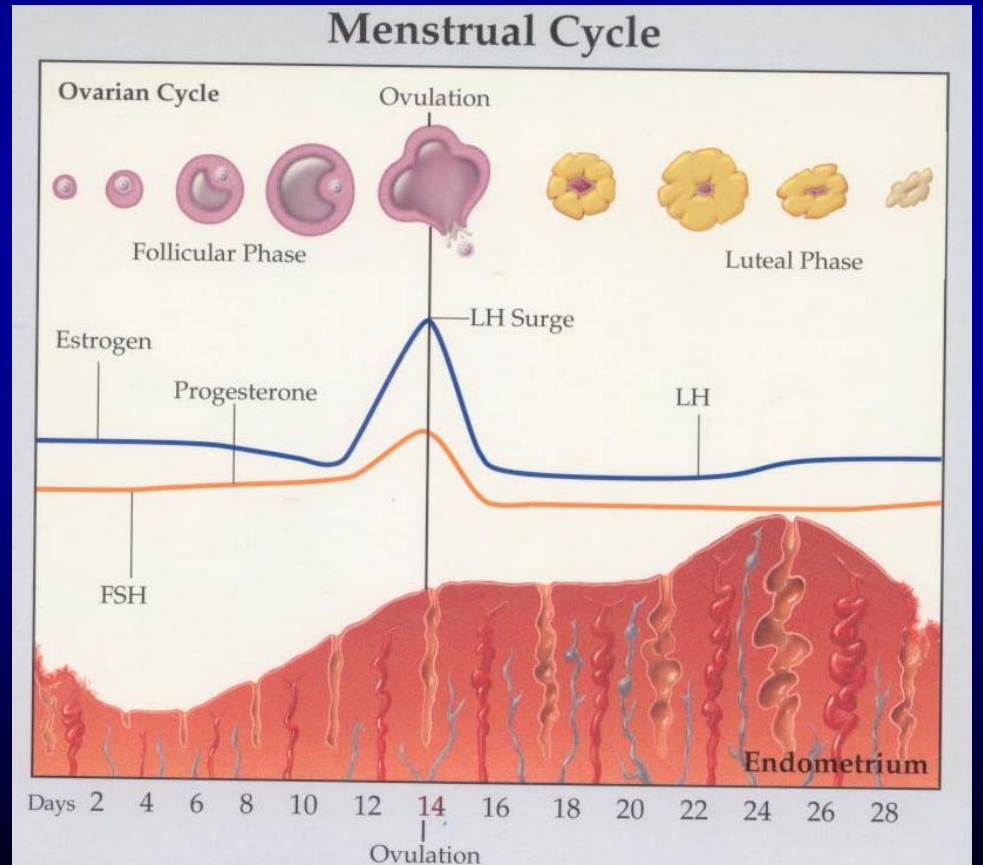
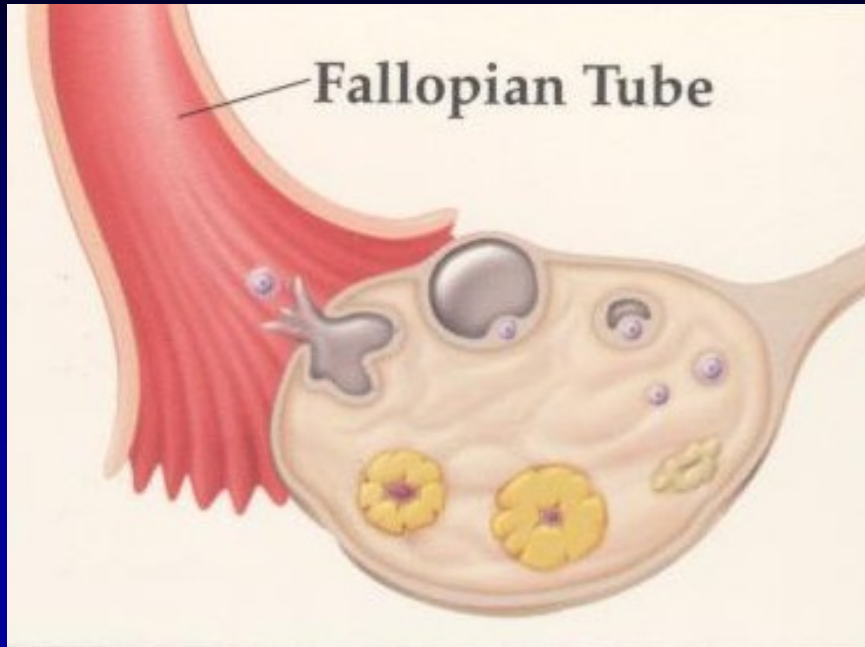
Myths about infertility

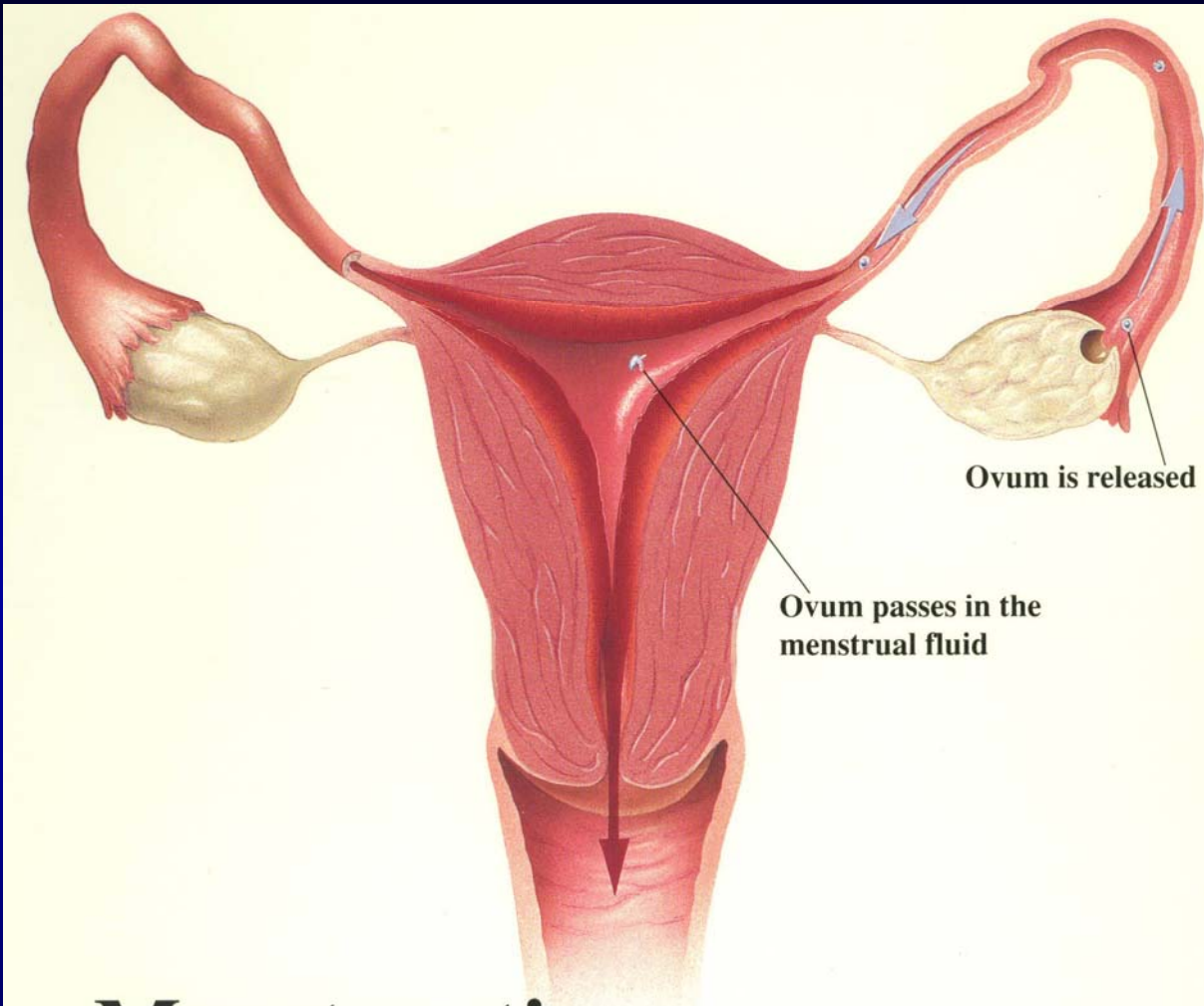
- **Infertility is a woman's problem**
- **Infertility is about sexual inadequacy**
- **Infertility is a result of stress**





Normal Anatomy





Menstruation

Menstruation marks the first day of the menstrual cycle and begins when the endometrium sheds and passes through the vagina in the menstrual fluid.

Infertility basics

- 1 of 6 couples
- > 1 year to conceive
- Male factor 40%
- Female factor 40%
- Combined 20%



Female infertility

- **Ovulatory disturbances** **40%**
- **Anatomical distortion** **40%**
 - Tubal blockage
 - Adhesions (scarring)
 - Endometriosis
- **Unexplained** **20%**



Male infertility

- Men with sperm
- Men without sperm

Rabbinical roles

- **Counseling**
- **Spiritual support**
- **Halakhic instruction**
- **Physician-patient liaison**
- **Physician referral**



Improper rabbinical roles

- Herbs and potions
- Amulets
- Dispensing prescriptions
- Medical deferral

Diagnostic testing

- **Endocrine testing**
- **Pelvic exam**
- **Semen analysis**
- **Postcoital testing**
- **Endometrial biopsy**
- **Hysterosalpingogram**
- **Laparoscopy**
- **Ultrasound (sonogram)**



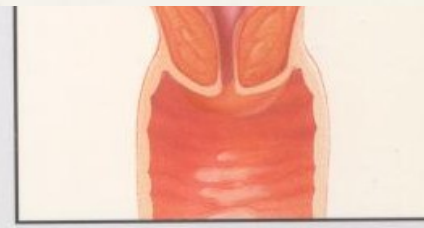
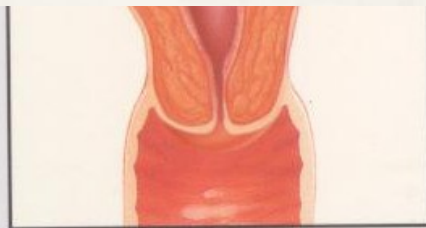
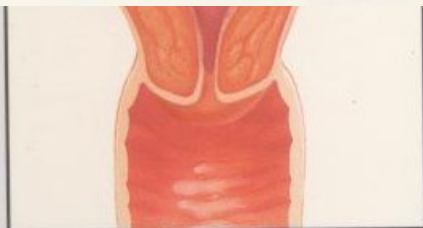
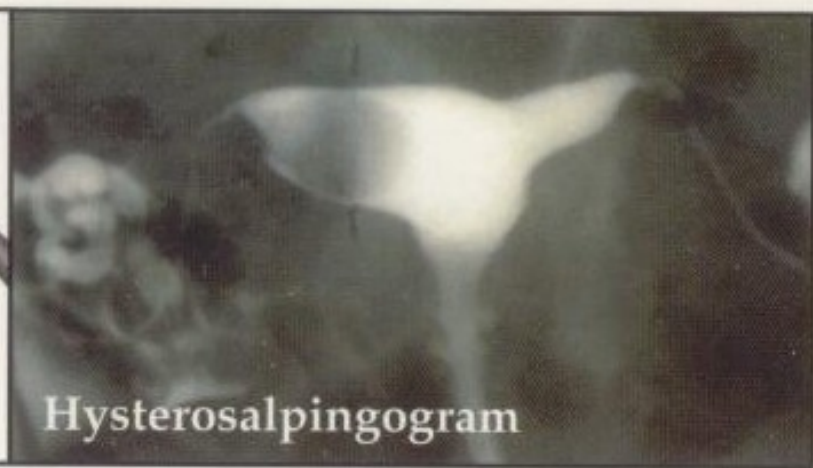
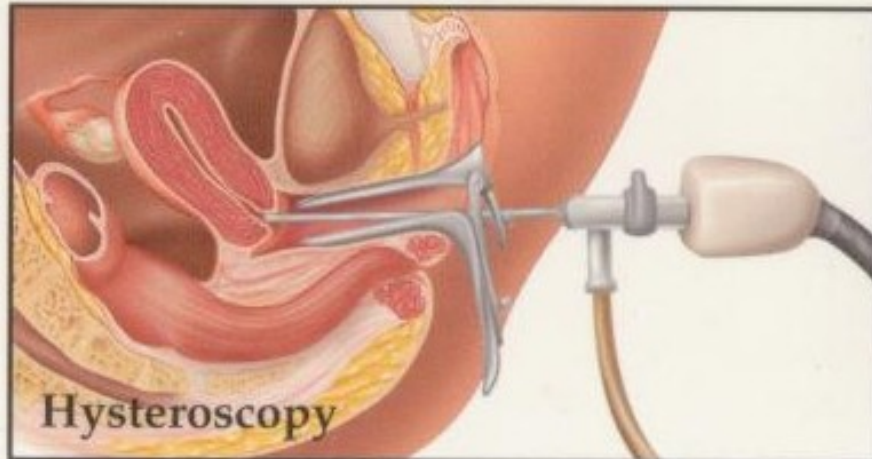
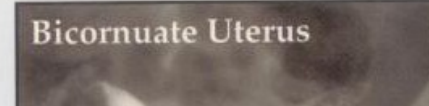
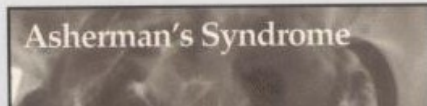
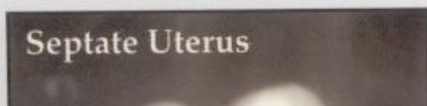
Treatment strategies

- **Medical**
- **Surgical**
- **Insemination**
- **In vitro fertilization**



Diagnostic testing

- Hysterosalpingogram (HSG)



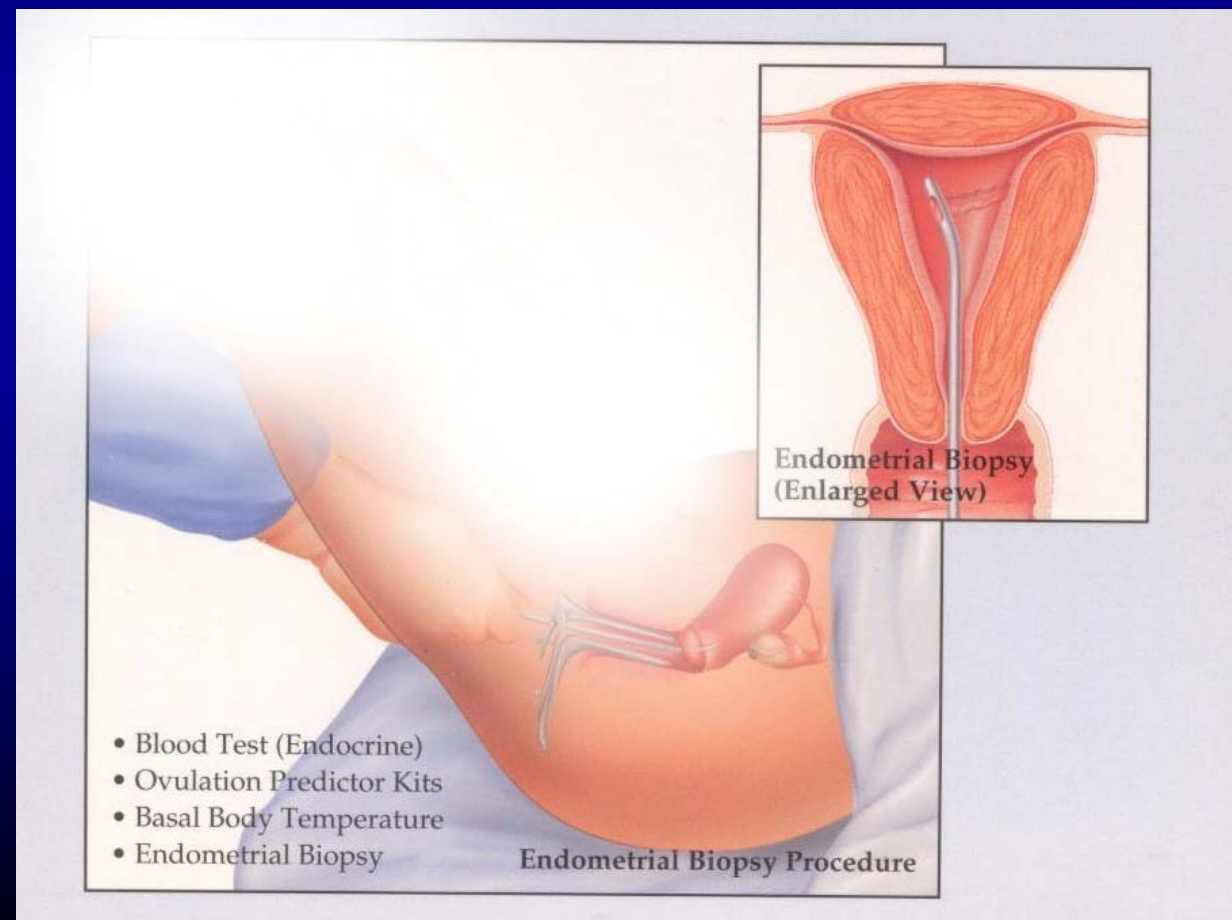
Septate Uterus

Asherman's Syndrome

Bicornuate Uterus

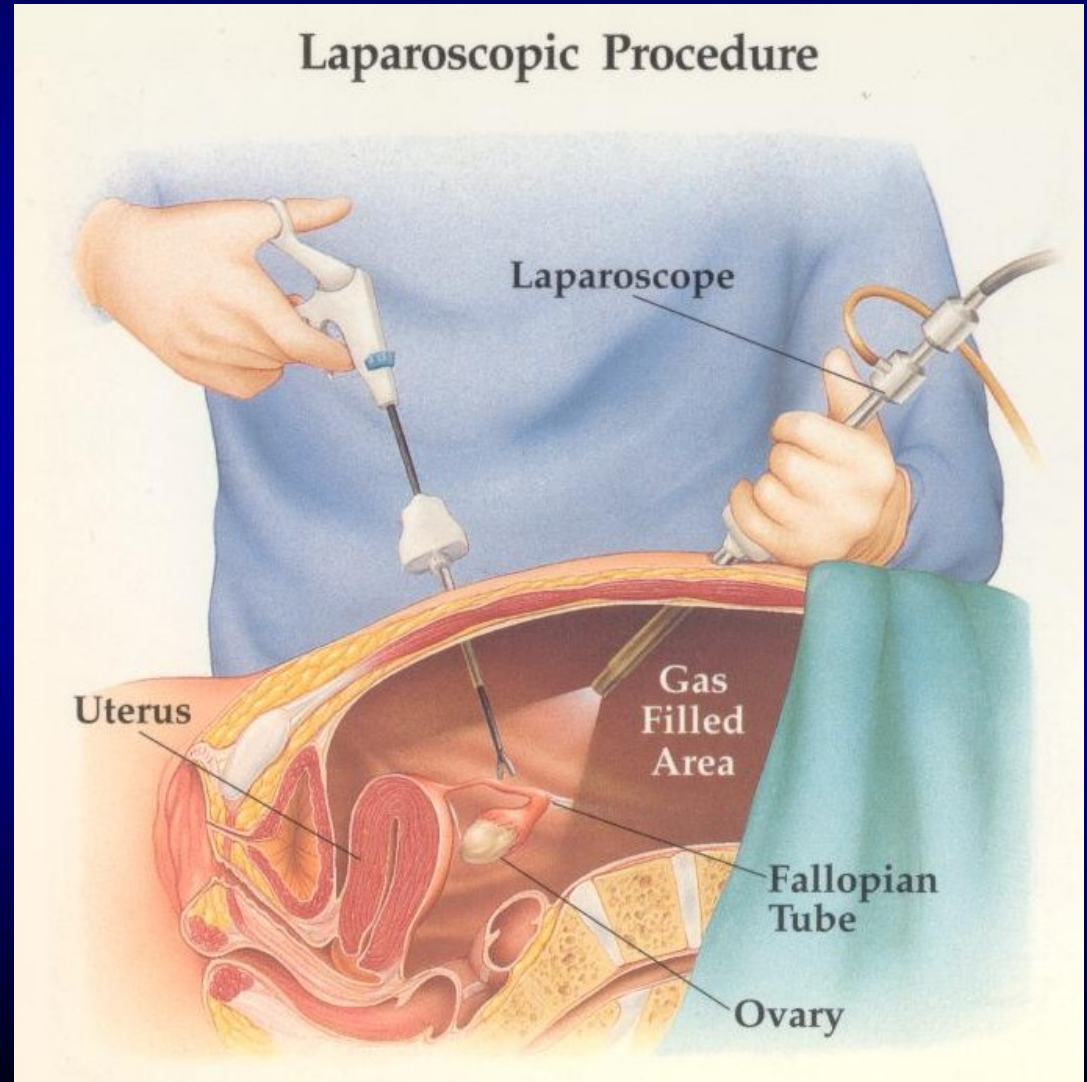
Diagnostic testing

- Endometrial biopsy



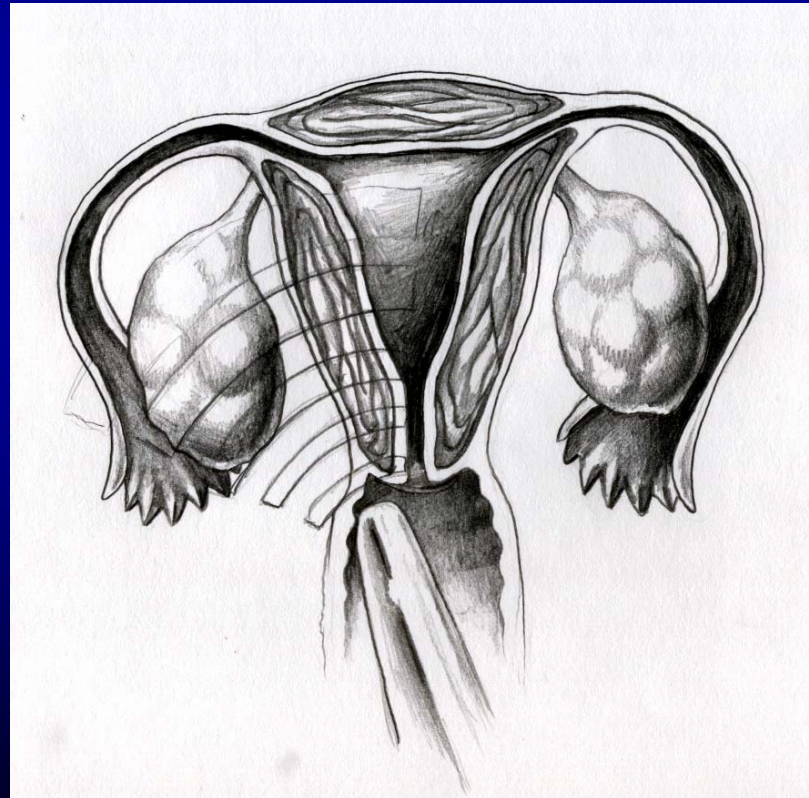
Diagnostic testing

- Laparoscopy



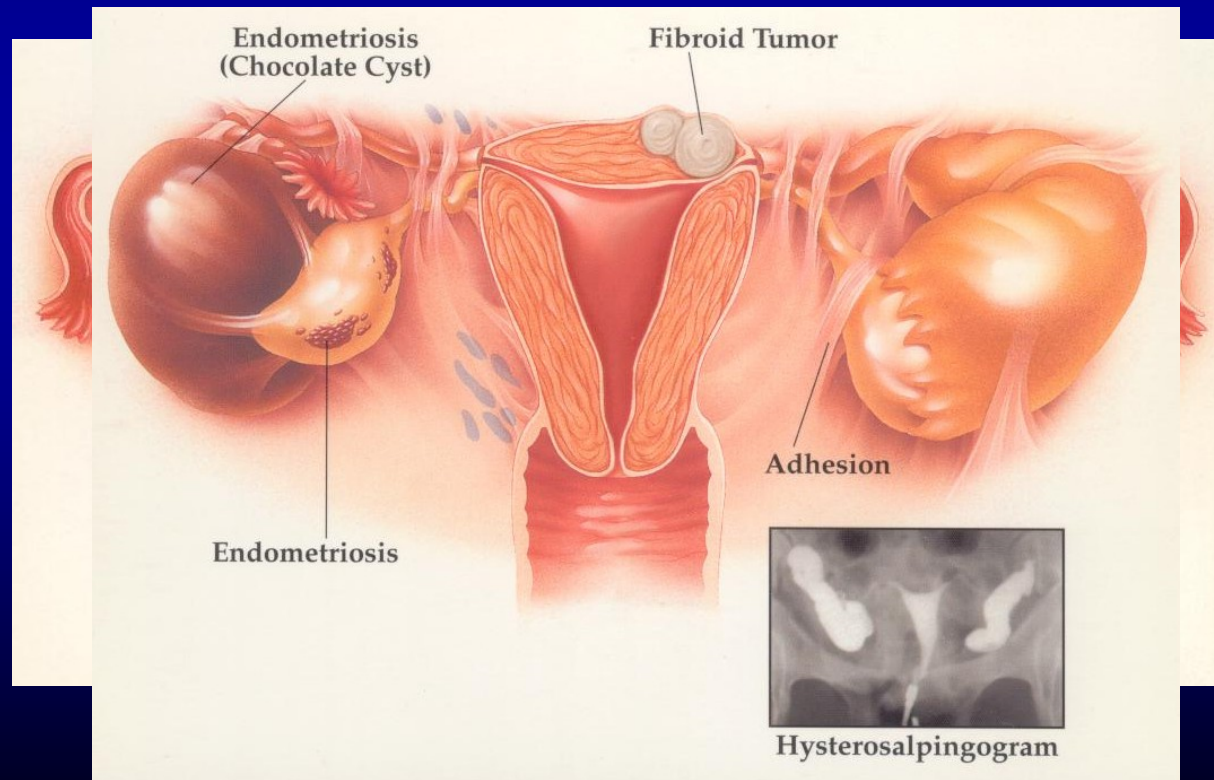
Diagnostic testing

- Transvaginal ultrasound



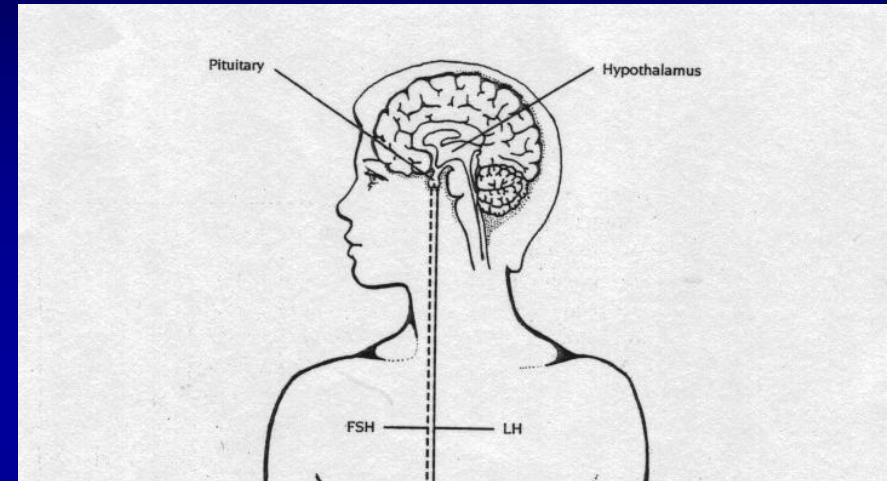
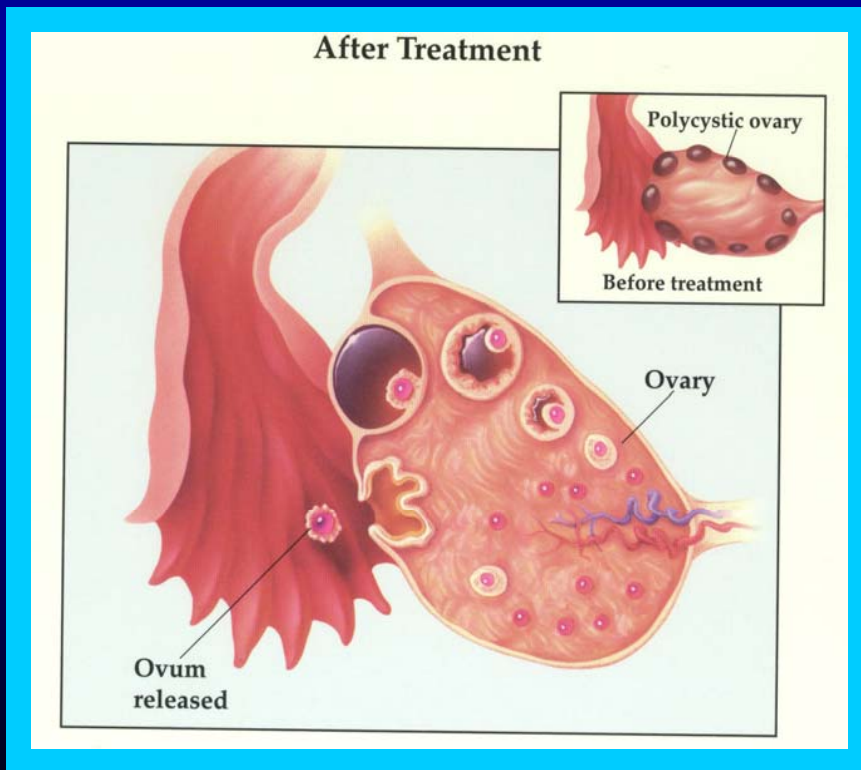
Treatment strategies

- Surgery



Treatment strategies

- Ovulation induction



Compartments I and II

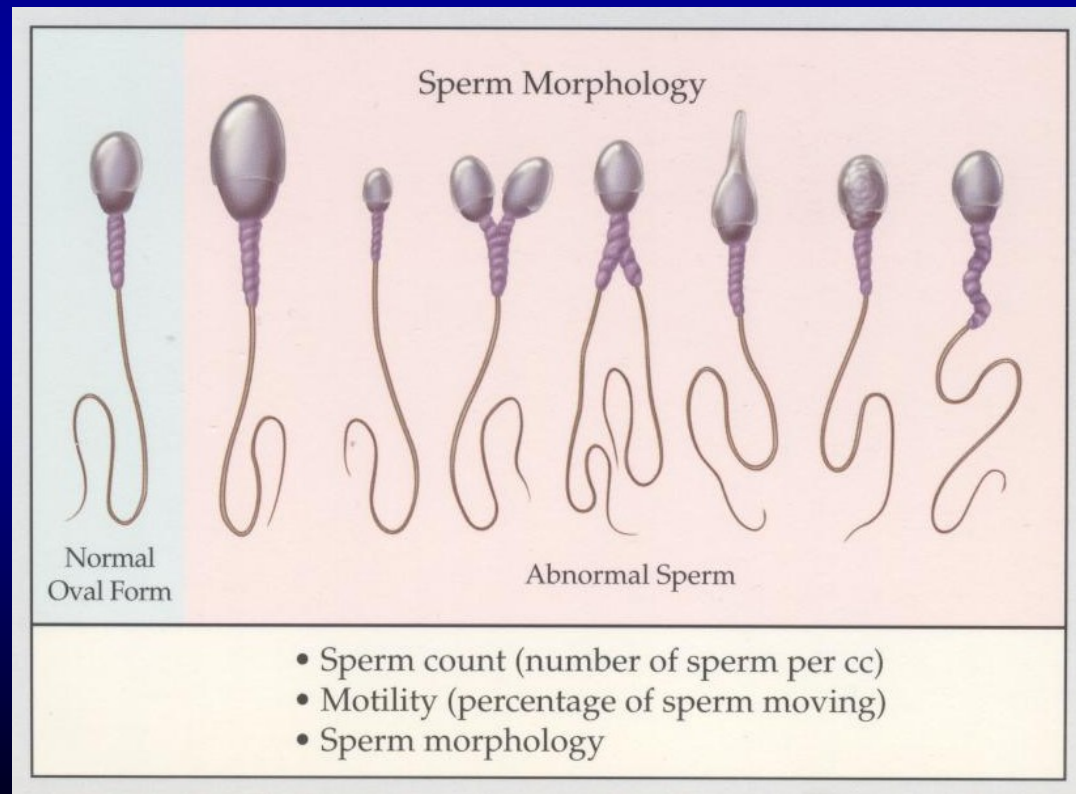
Compartments III and IV



The Ovulatory Cycle

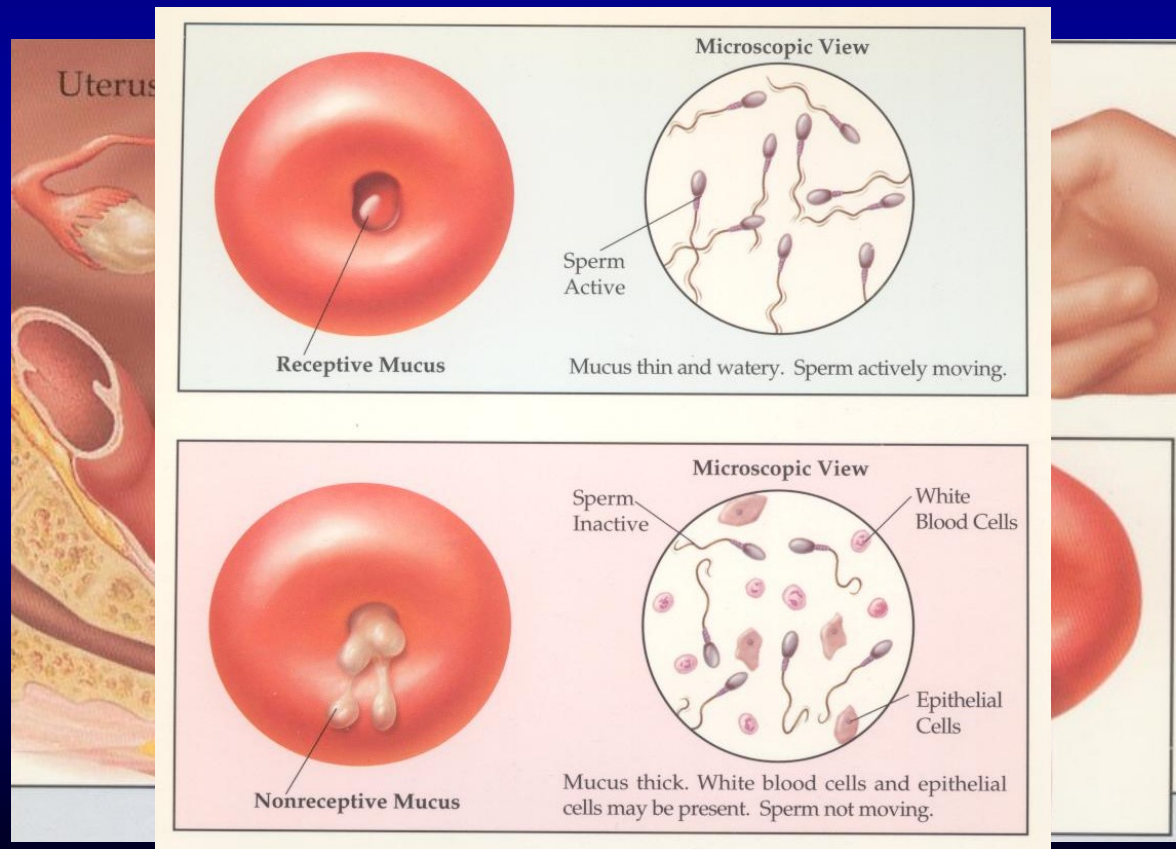
Diagnostic testing

- Semen analysis



Diagnostic testing

- Postcoital test



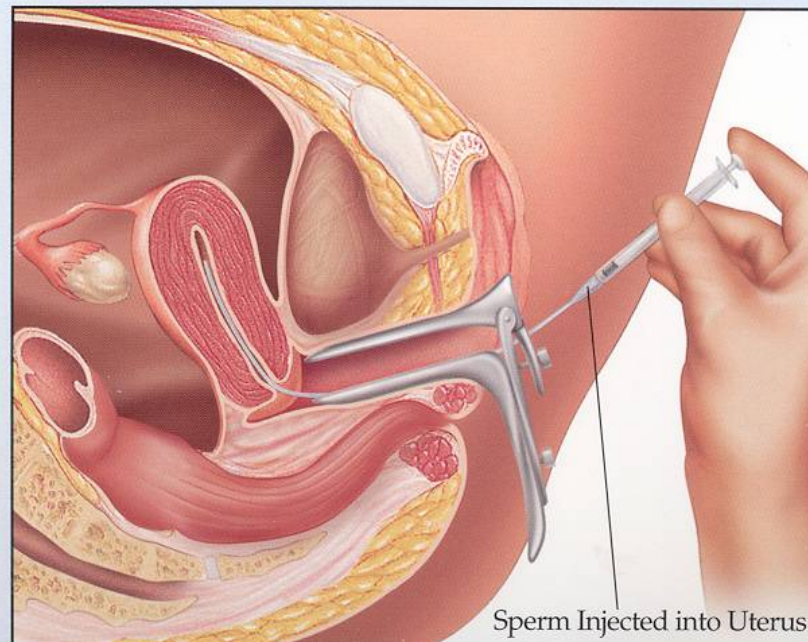
Sources

- Pages 1-8

Treatment strategies

- Insemination

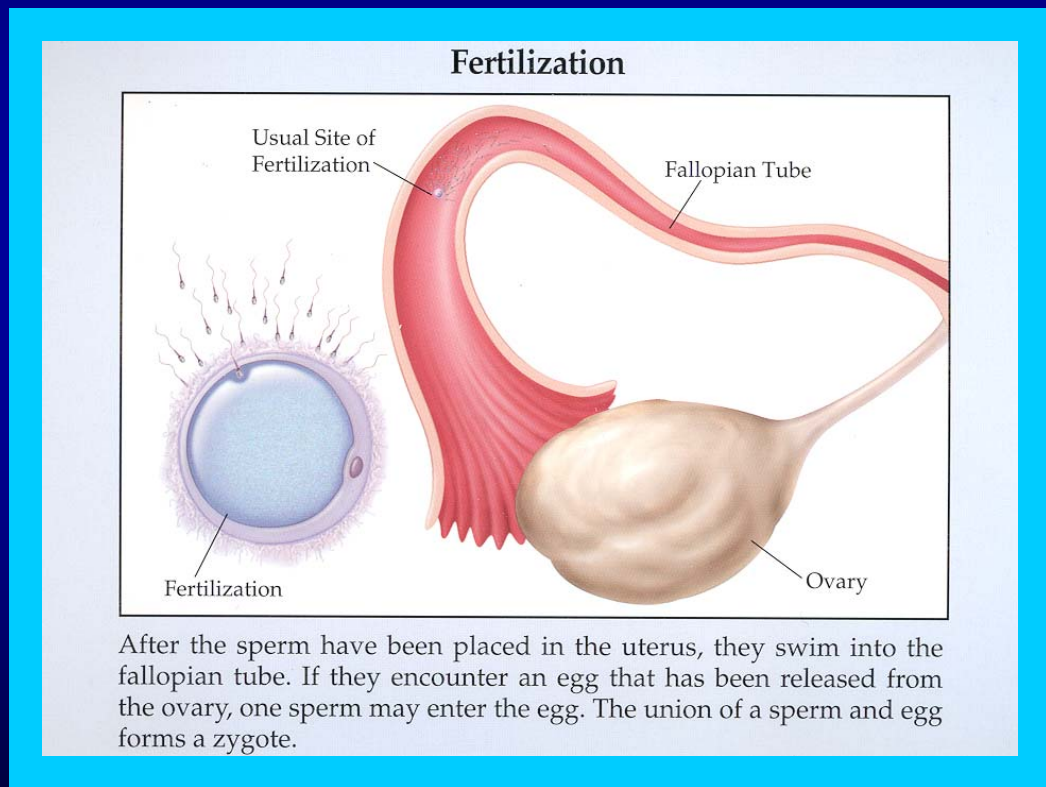
Intrauterine Insemination (IUI)



For IUI, sperm are first washed and placed into a sterile medium. The sperm are then concentrated in a small volume of medium and are injected directly into the uterus.

Treatment strategies

- Ovulation induction/IUI



Empirical treatment



Ovulation induction/IUI: Halakhic pitfalls

- IUI prior to mikveh
- Hashgacha
- Multifetal pregnancy

The Metro Section

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The New York Times

SATURDAY, APRIL 17, 1999

Prosecutor Releases Man Charged in Policewoman's Death

By ANDY NEWMAN

Six days after they charged a man with murdering an Orange, N.J., policewoman, the authorities let him go last night, saying that he could not have been at the scene of the shooting when it happened.

The Essex County Prosecutor, Patricia A. Hurt, who released the man, Terrance Everett, refused to say if there was another suspect in the killing.

Ms. Hurt also refused to say where she thought Mr. Everett had been around 8:30 P.M. on April 8, when Officer Joyce Anne Carnegie was shot. Mr. Everett had pleaded not guilty on Monday to charges of murder, robbery and criminal possession of a weapon.

"I have concluded that Everett is not the person who committed this crime," Ms. Hurt said. "It is my responsibility to see that justice prevails, and it would be unjust to detain Everett now when it would have been impossible for him to have been at the

scene." She also acknowledged that he had passed a lie detector test.

Mr. Everett's lawyers have said that he was with his wife, eating a hamburger at a fast-food restaurant 10 blocks away, when Officer Carnegie was killed. After his release last night, Mr. Everett, 24, a security guard from neighboring East Orange who has a young son, was driven away from the Essex County Courts building in his lawyer's black sedan.

Ms. Hurt's terse announcement capped a week of baffling and unsettling developments in the investigation into the death of Officer Carnegie, who was shot in the head and abdomen when she stopped her car to question a robbery suspect on a dark, empty street.

The police arrested Mr. Everett at home on Saturday, two days after the shooting, and said that he was the killer. But on Sunday, three more people were arrested as part of the investigation, and one of them died in the custody of the Orange police; his

family said he was beaten.

On Monday, Mr. Everett, who was being held in lieu of \$1 million bail, appeared in court with bruises on his face that his lawyers said he had received after his arrest. And on Tuesday, television newscasts reported that Mr. Everett had passed a lie detector test.

As some law enforcement officials quietly opined that the authorities had the wrong man and Ms. Hurt retreated behind a wall of no-comments, the chief assistant prosecutor, Patrick Toscano, resigned abruptly on Wednesday. Mr. Toscano had professional differences with Ms. Hurt over the handling of this and other cases, a county official said earlier this week.

After his release last night, Mr. Everett, who had appeared fearful and confused at his court appearance on Monday, told News 12 New Jersey, a cable news station, that he did not know why he had been arrested.

Ms. Hurt said last night that witnesses to the three robberies Officer Carnegie was

investigating and "someone who allegedly witnessed the shooting" all identified Mr. Everett as the man they saw. His photograph was on file because he has a police record.

"It was like, why me, of all the baldheaded people with goatees? That was just hard for me to understand," Mr. Everett said.

After Mr. Everett's release, a young man who answered the door at his house would say only that "It's good news, but we don't have anything to say right now."

One of Mr. Everett's lawyers, Raymond A. Hamlin, said last night that his client was "relieved" and that he planned to meet with him today. When asked if he planned to sue the authorities for false arrest, Mr. Hamlin replied, "That prospect certainly exists."

Mr. Hamlin and Ronald Hunt, Mr. Everett's other lawyer, had maintained from the start that their client had an alibi. The lawyers filed papers to get both the results

Continued on Page B5



Birth Mix-Up Avoidable, Inquiry Finds

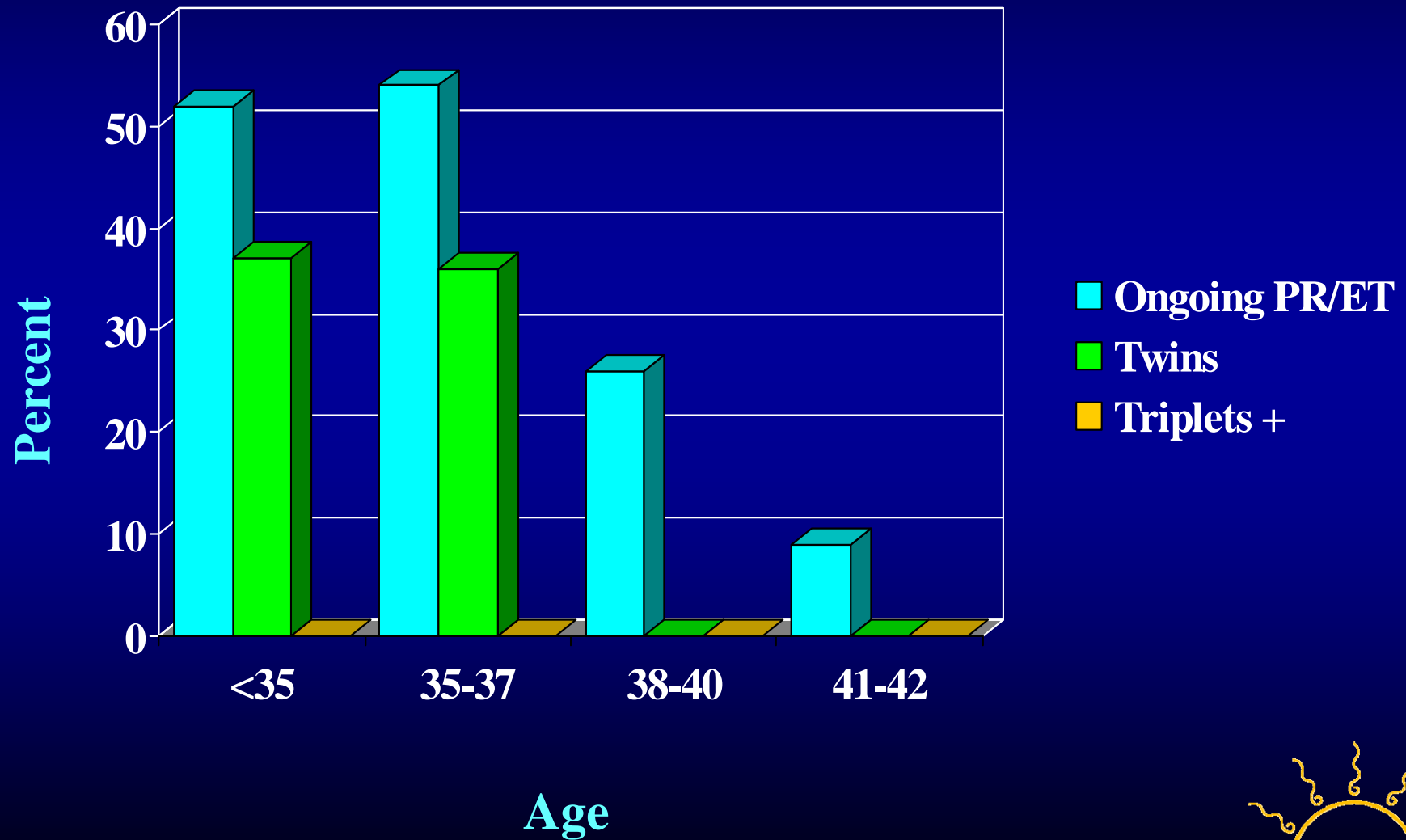
An Embryologist Failed To Correct His Mistake

By JIM YARDLEY

In the case of a mix-up of embryos that caused a white Staten Island woman who underwent in vitro fertilization to give birth

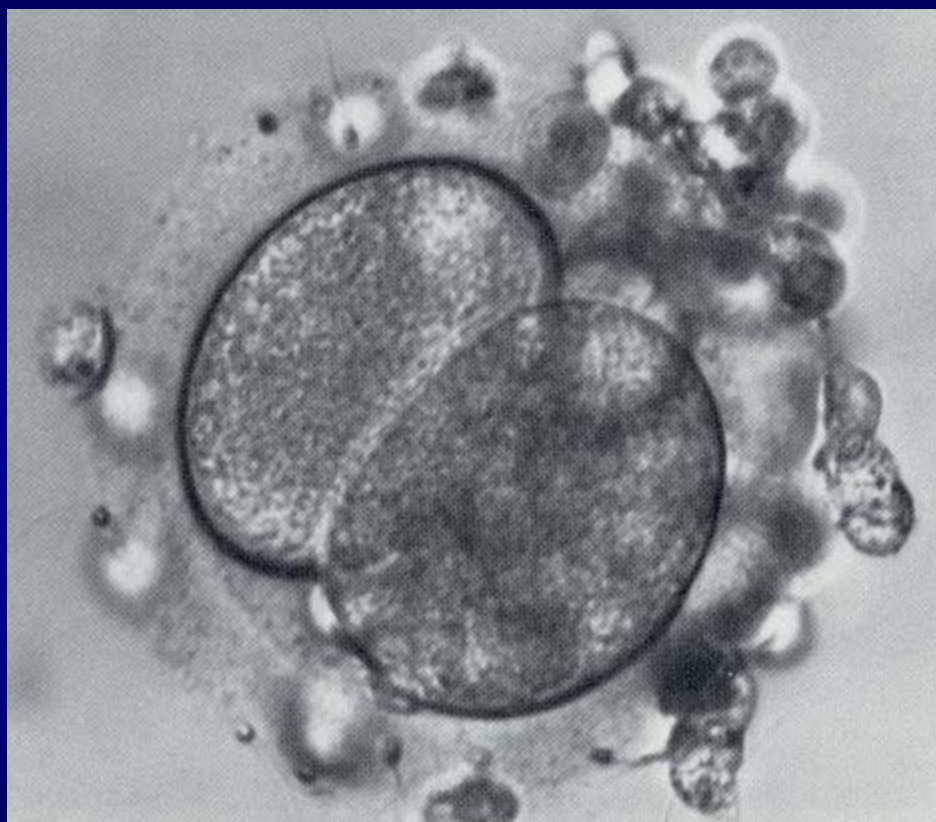
IVF Pregnancy Rates

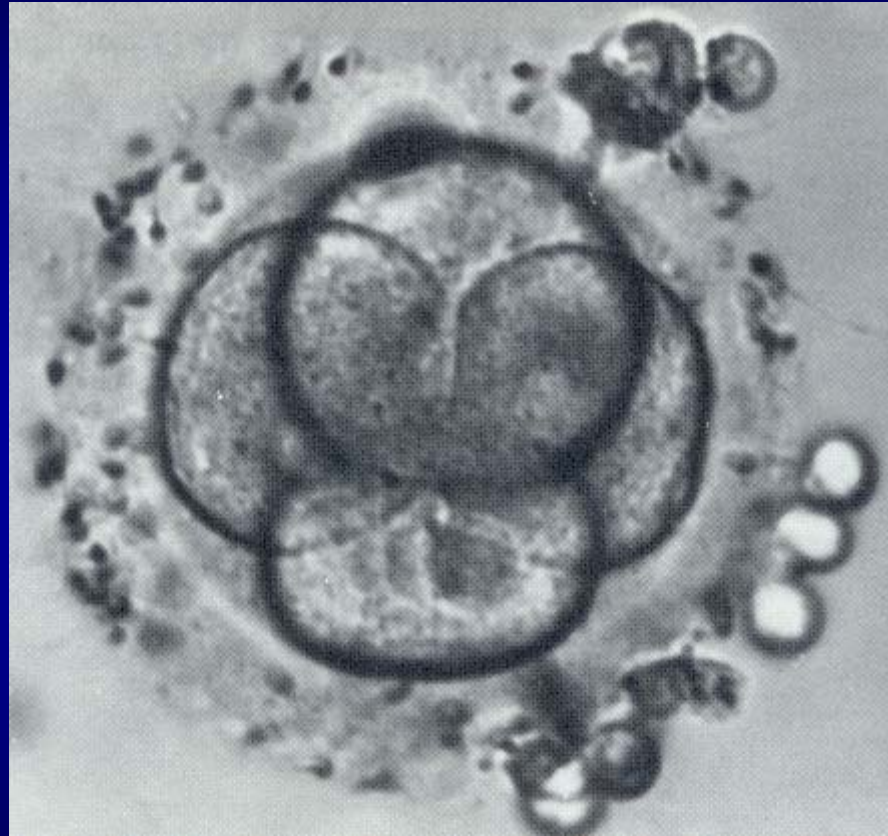
Jan-Sept 2007



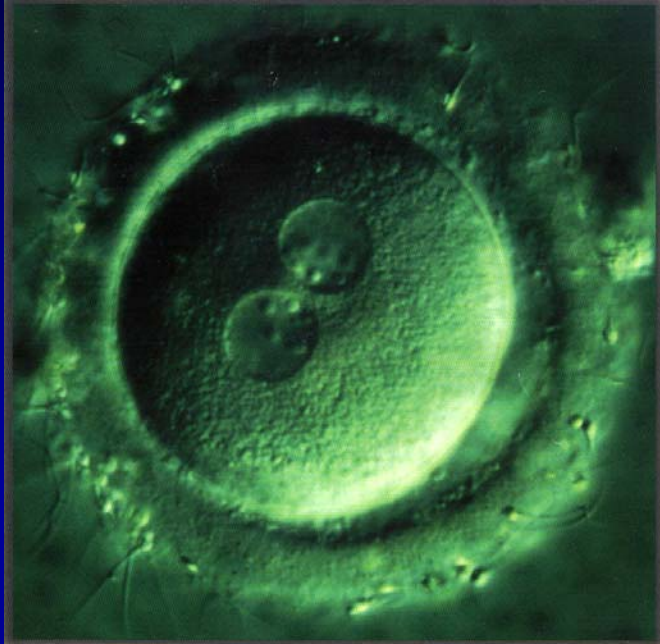
In Vitro Fertilization











In Vitro Fertilization Indications

- **Anatomical disease**
 - Endometriosis
 - Adhesions
 - Tubal blockage
- **Unexplained infertility**
 - Failure to conceive with other treatments
- **Severe male factor**



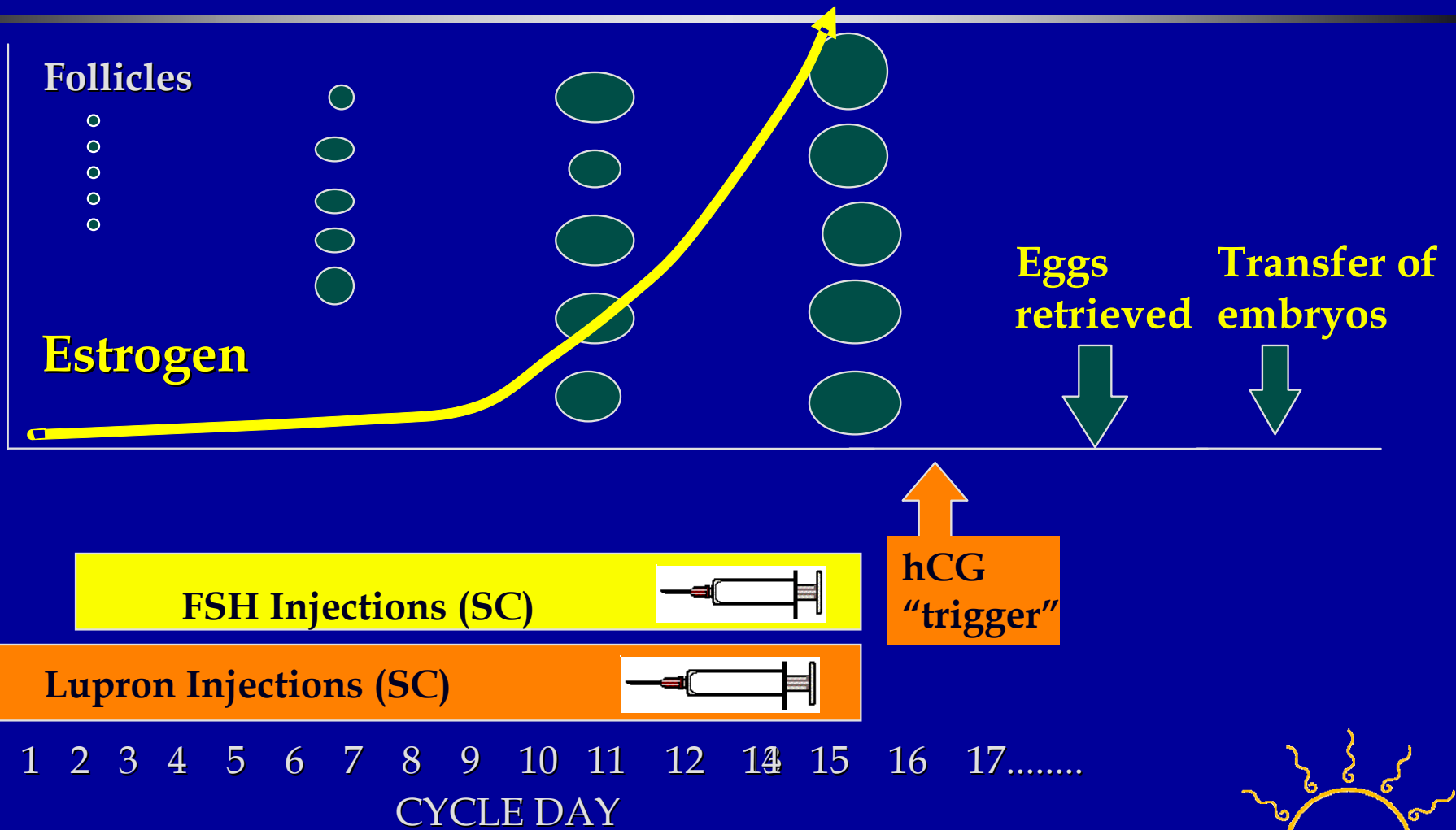
In Vitro Fertilization

Basic steps

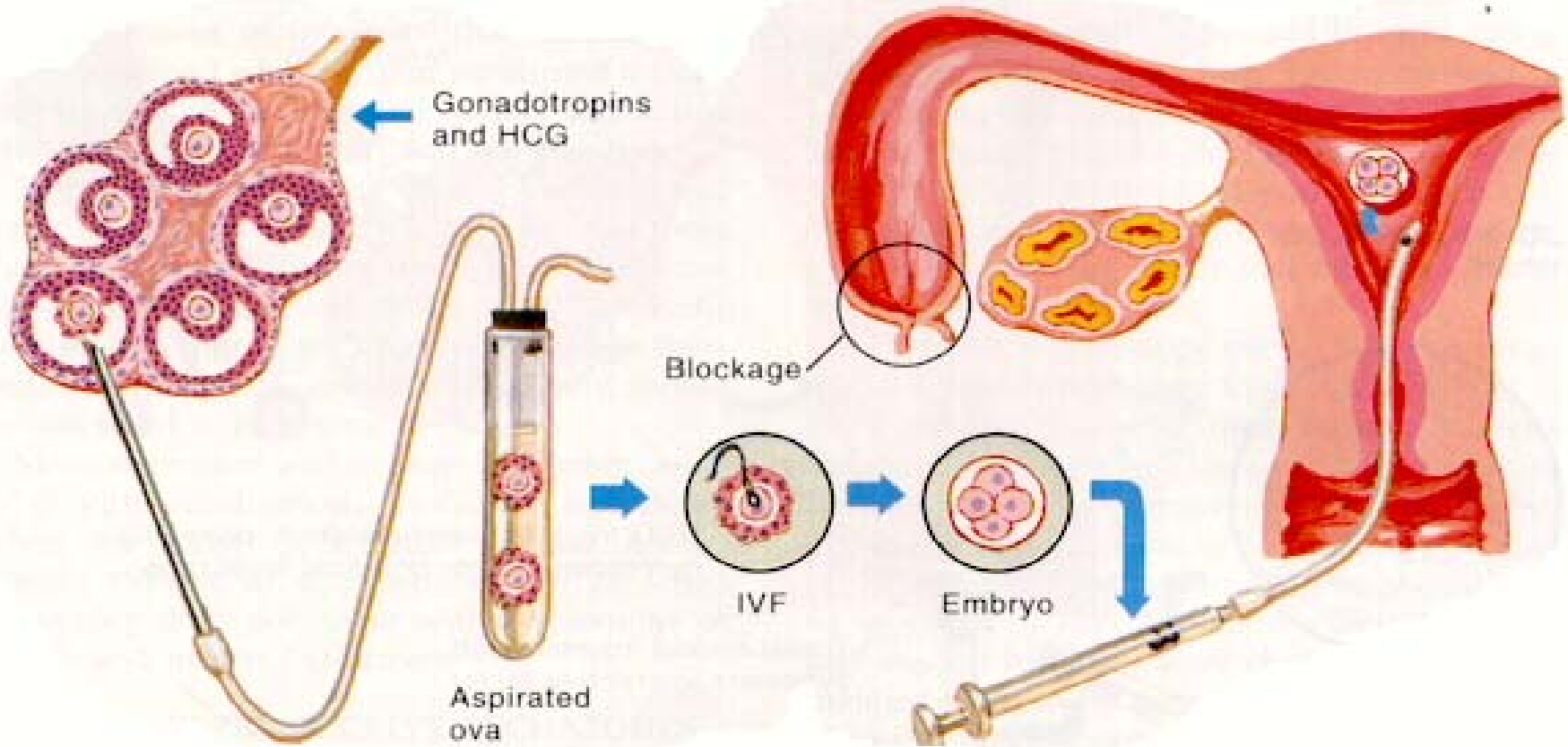
- **Ovulation induction**
- **Egg retrieval**
- **Sperm procurement**
- **In vitro culture of eggs and sperm**
- **Embryo transfer**
- **+/- Cryopreservation**



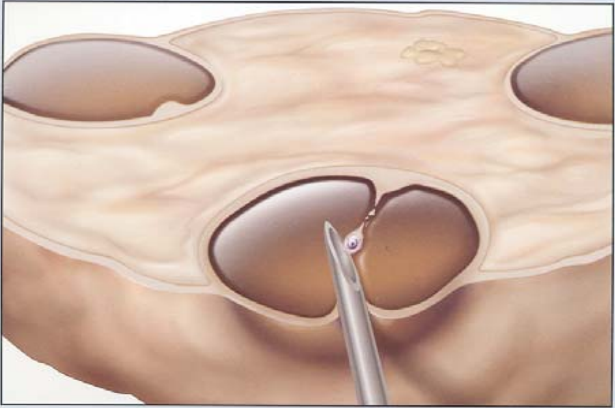
IVF Cycle



“In Vitro Fertilization” (IVF)



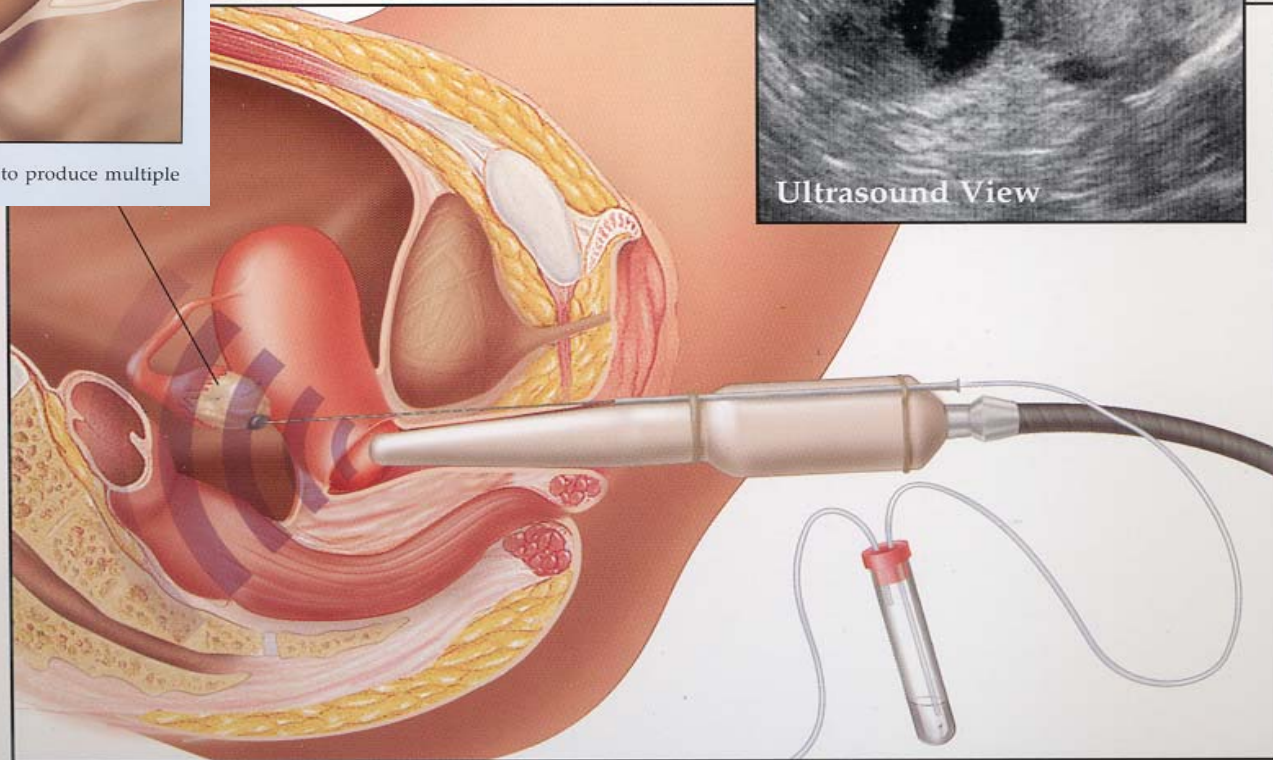
Transvaginal Oocyte Retrieval Procedure



Hormones may be administered to the woman to produce multiple eggs. The eggs are then retrieved from the ovary.

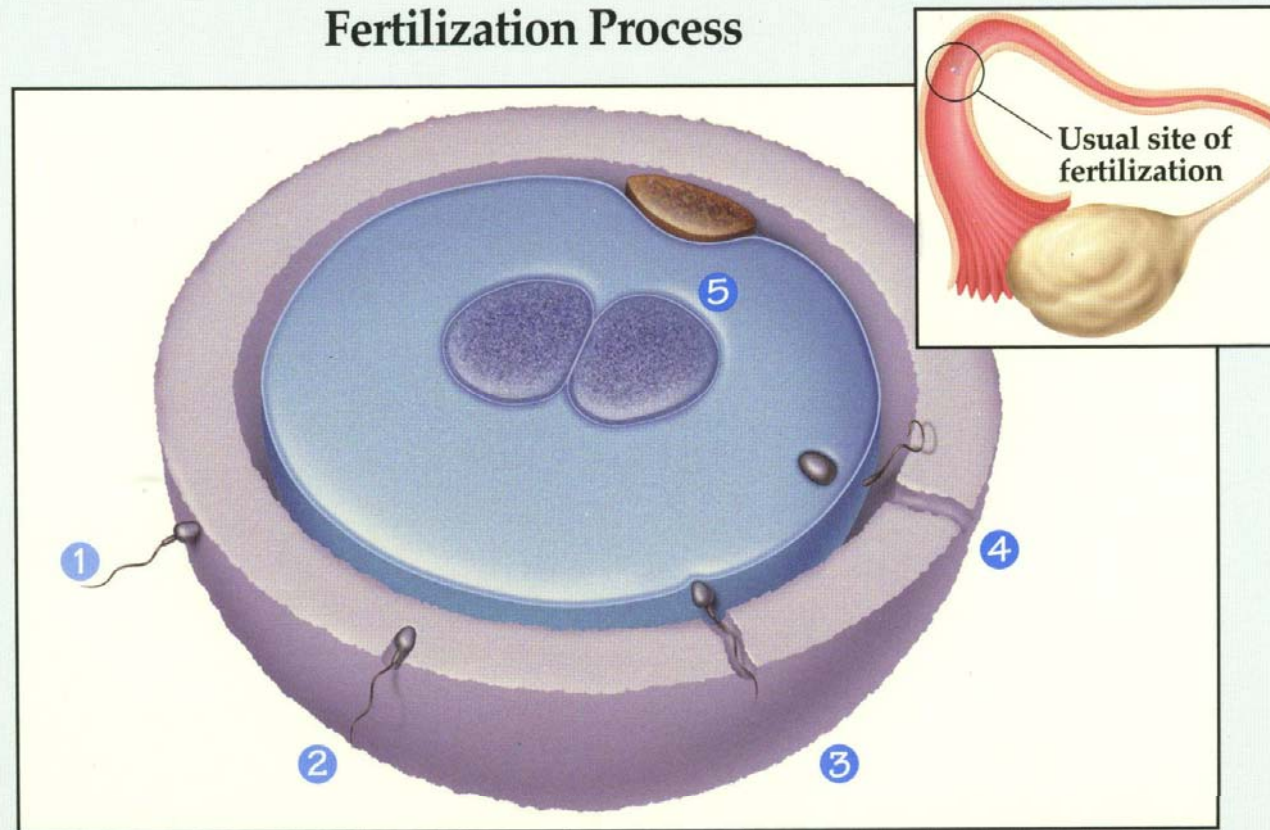


Ultrasound View



Using ultrasound to view the ovary, the physician inserts the needle through the wall of the vagina into the ovary and removes the egg for use in IVF or GIFT.

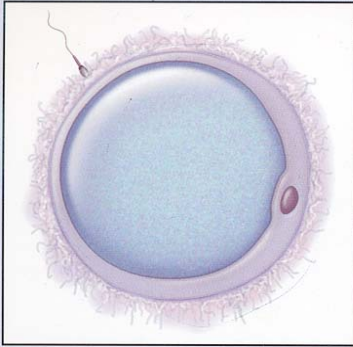
Fertilization Process



After the sperm enters the uterus, they swim into the fallopian tube. When they encounter an egg that has been released from the ovary, one sperm may enter the egg. The union of a sperm and egg forms a zygote.

- | | |
|---------------------------------|--|
| ① Sperm binds to egg | ④ Sperm enters egg |
| ② Sperm begins to penetrate egg | ⑤ Chromosomes from sperm and egg unite to form pronuclei |
| ③ Sperm penetration continues | |

Microscopic View



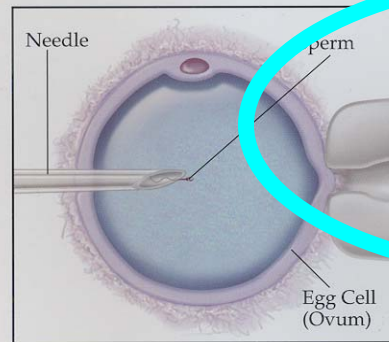
Gamete

A mature male sperm or female egg is called a gamete.



Zygote (Embryo)

An egg and sperm unite to form a zygote.



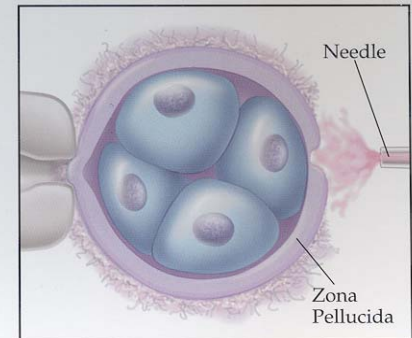
ICSI (Intracytoplasmic Sperm Injection)

A single sperm is injected into the egg.

Enlarged View

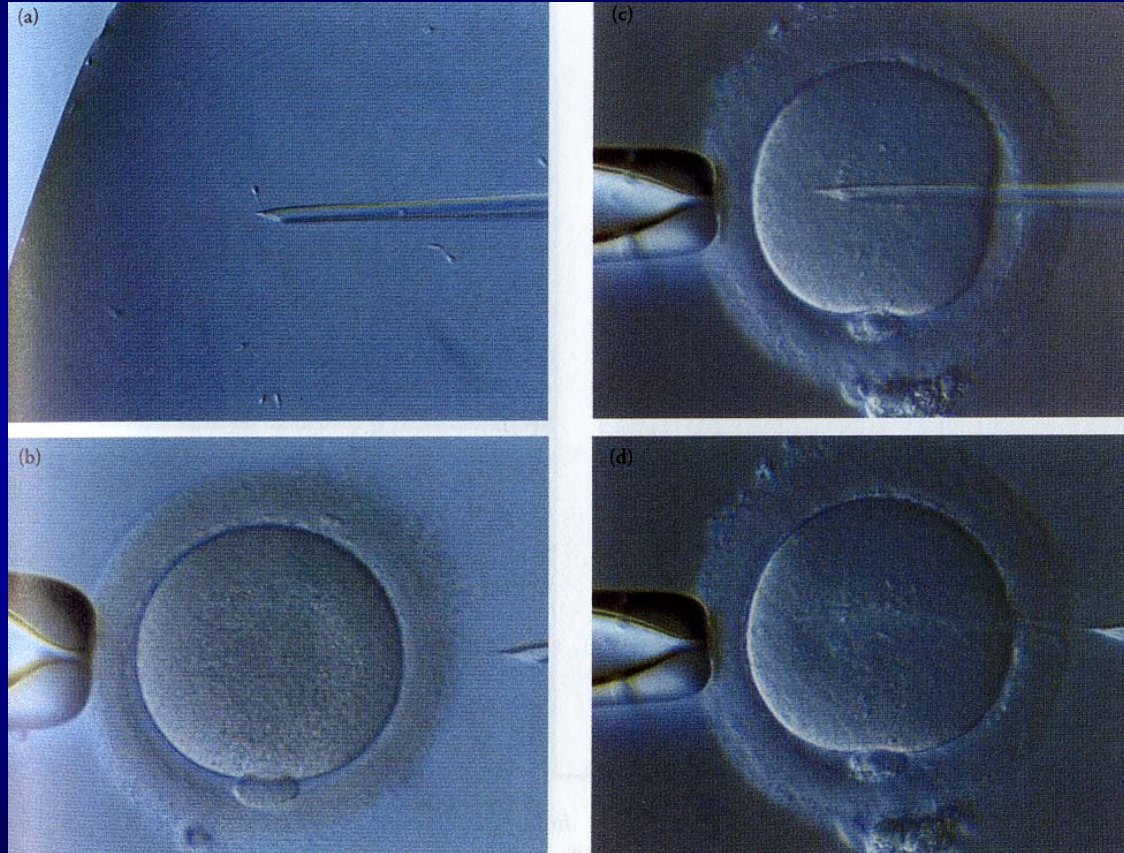
Assisted Hatching

A portion of the egg shell is removed to allow the embryo to hatch and escape.



Enlarged View

ICSI



Sources

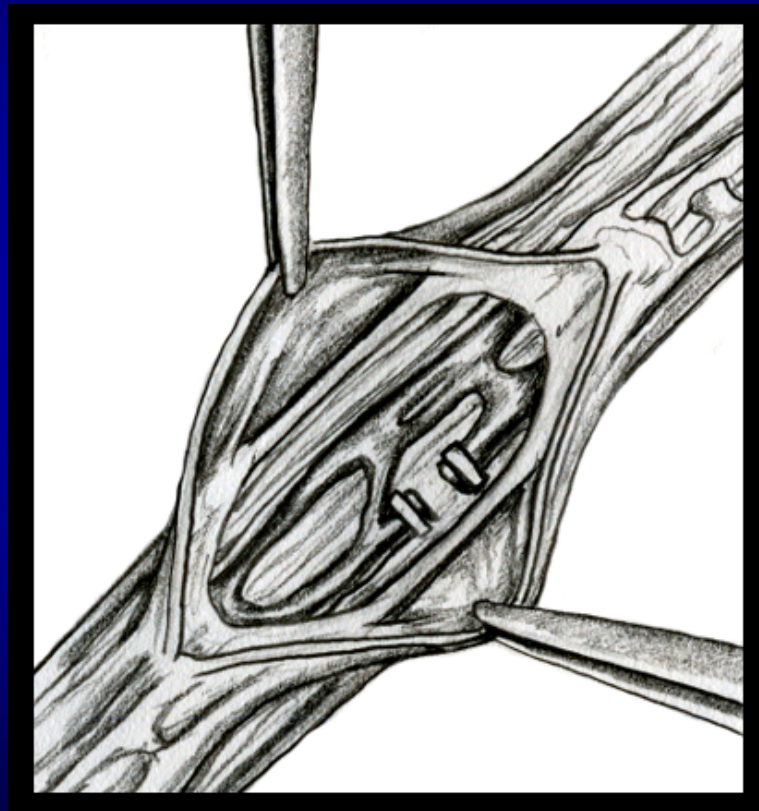
Male factors



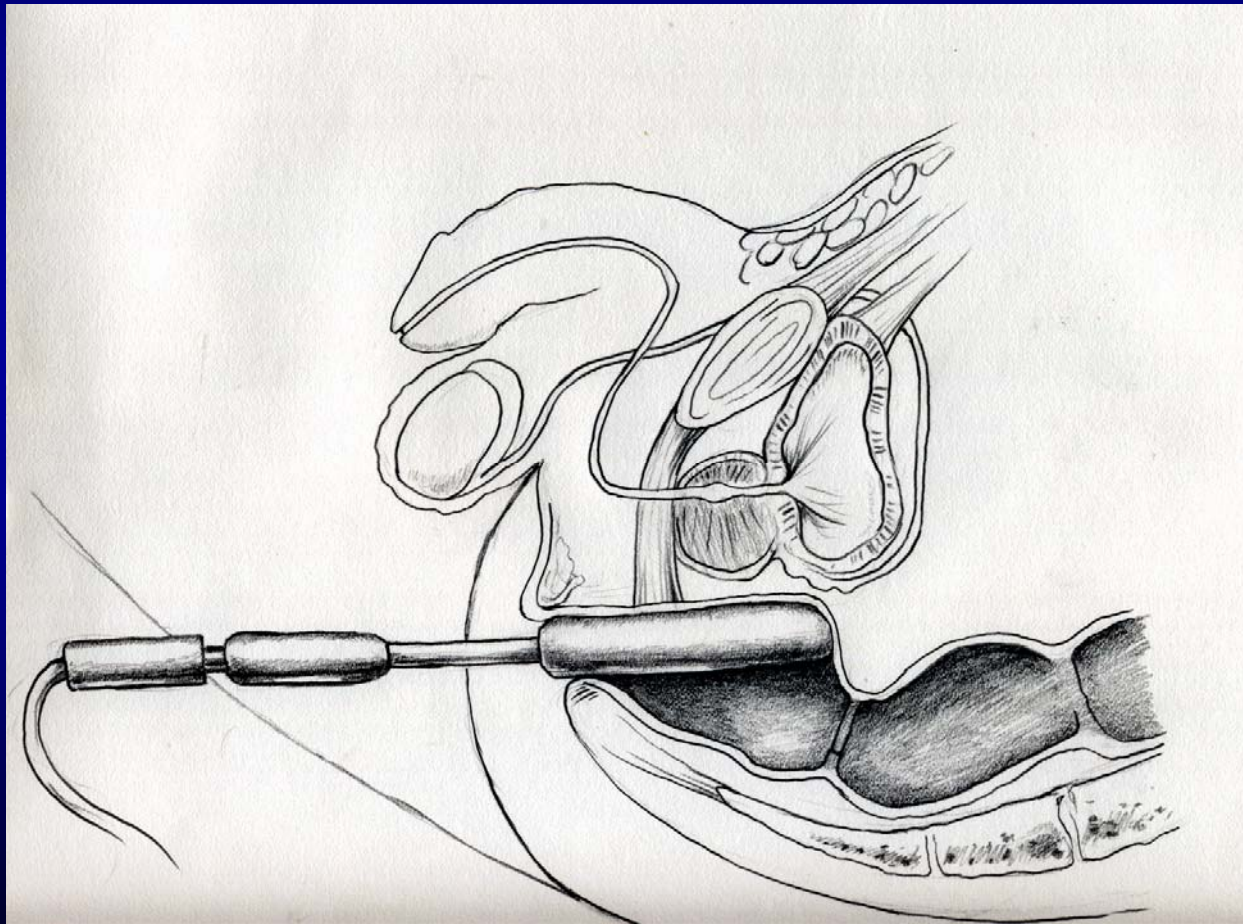
Normal anatomy



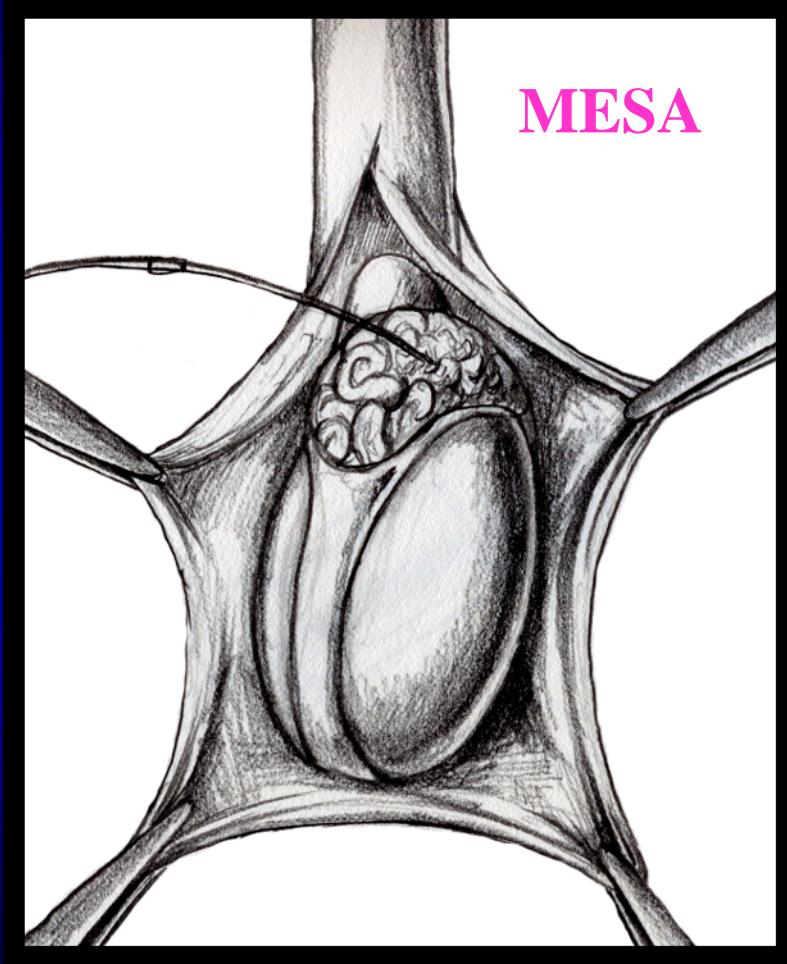
Varicocele repair



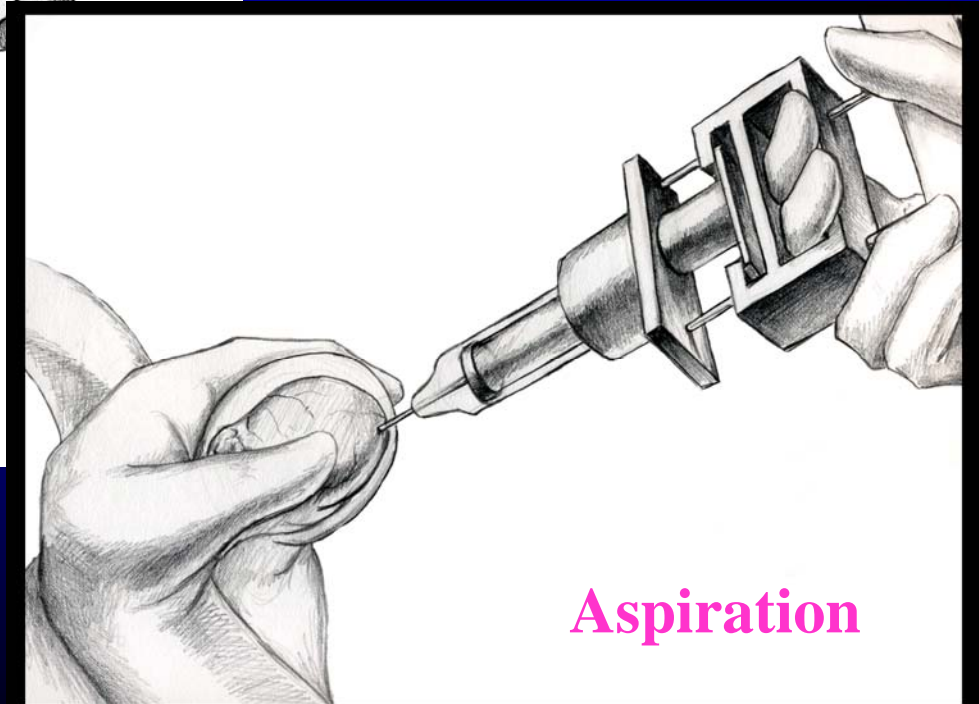
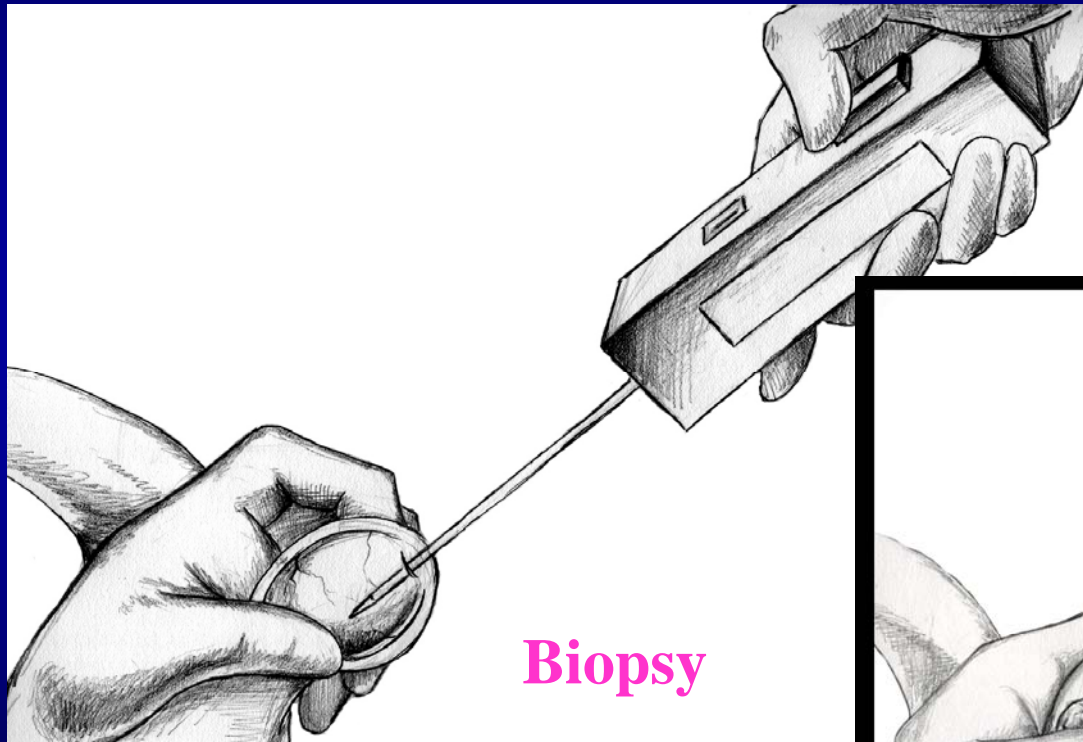
Electroejaculation



Microsurgical epididymal sperm aspiration

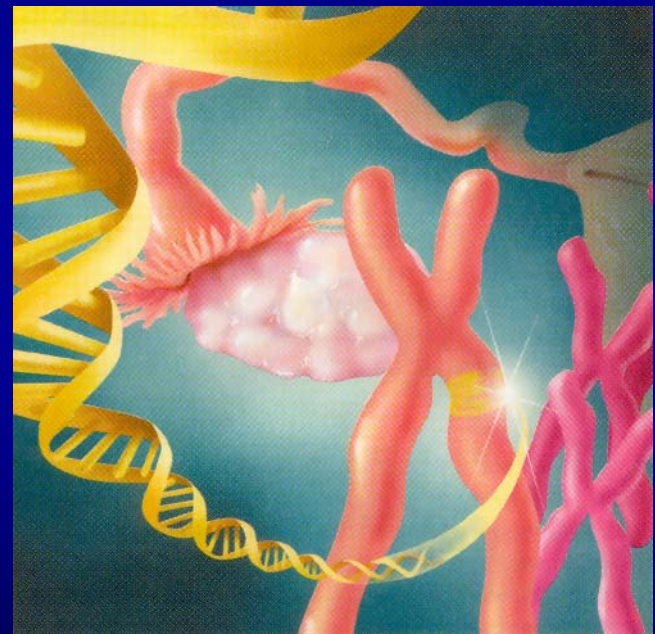


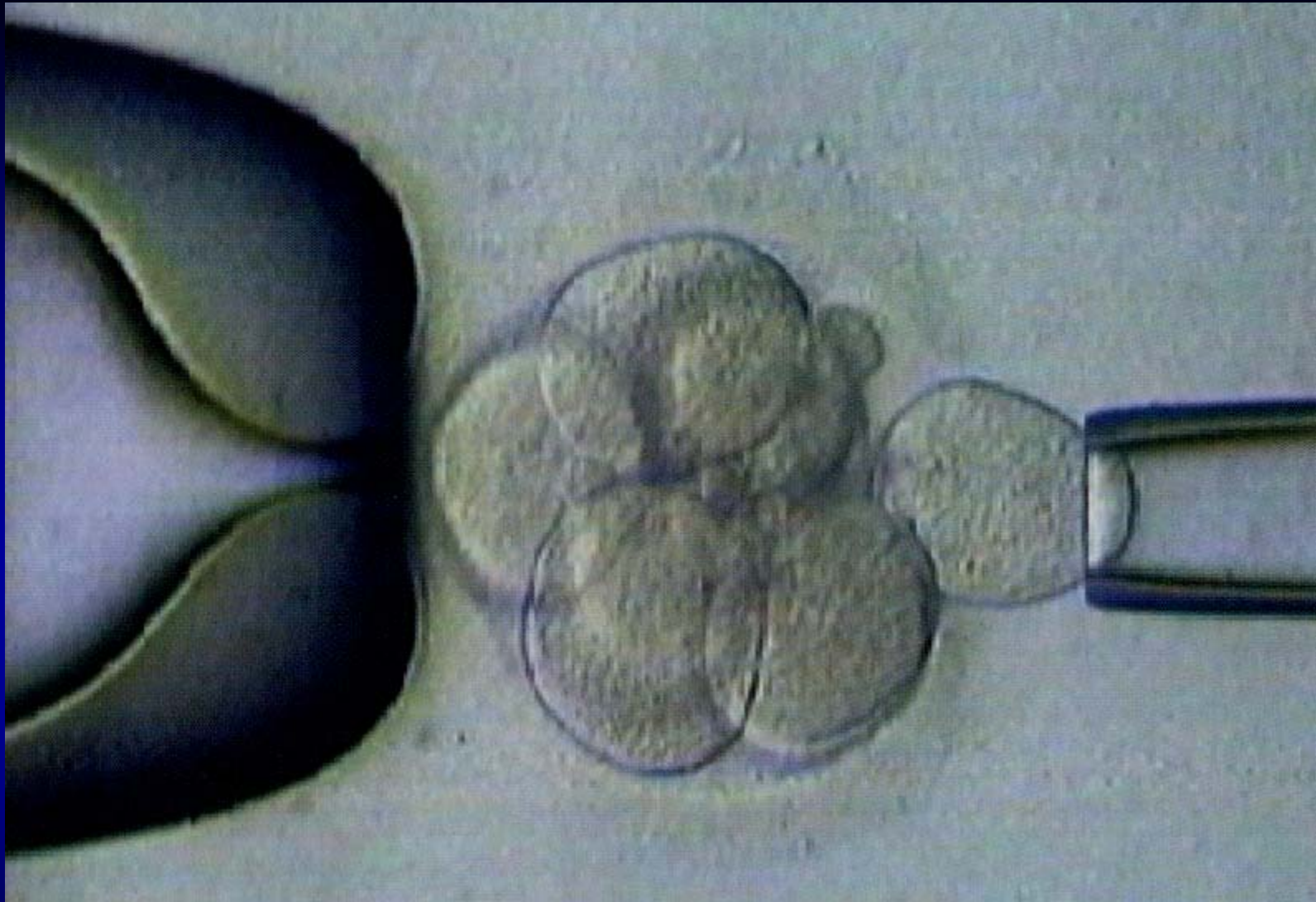
Testicular sperm extraction



Ashkenazic Genetic Diseases

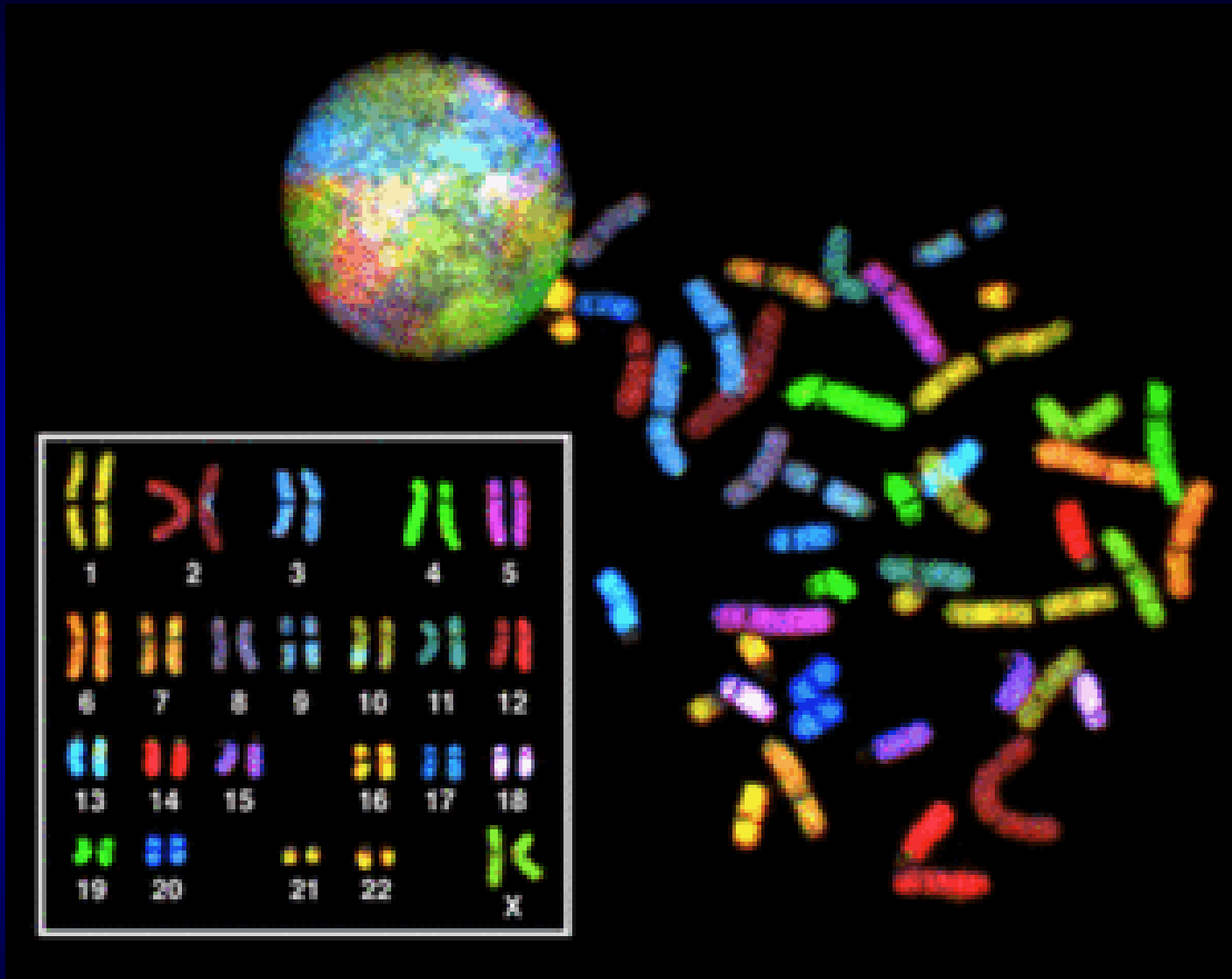
- Tay Sachs Disease
- Bloom Syndrome
- Canavan's Disease
- Cystic Fibrosis
- Familial Dysautonomia
- Fanconi Anemia
- Gaucher's Disease
- Mucopolidosis Type IV
- Niemann Pick Disease





Preimplantation Genetic Diagnosis





Genetic Disorders Diagnosable by PGD

- **X-linked**
 - Lesh-Nyhan syndrome
 - Duchenne muscular dystrophy
 - Hemophilia A and B
 - Fragile X syndrome
 - Many others
- **Chromosomal**
 - Aneuploidy (X,Y,8,13,14,15,16,17,18,20,21,22)
 - Balanced translocations
 - Chromosome inversions

