ARTIFICIAL REPRODUCTIVE TECHNOLOGY

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What are assisted reproductive technologies?

Techniques involving oocyte retrieval:
- Gamete Intra-Fallopian transfer (GIFT), Peritoneal Oocyte Sperm Transfer (POST)
- Zygote Intra-fallopian Transfer (ZIFT).
- In Vitro Fertilization (IVF)
- Tubal Embryo Transfer (TET)

Techniques involving sperm retrieval:
- Testicular Sperm Aspiration (TESA)
- Per-cutaneous Epididymal Sperm Aspiration (PESA)
- Microsurgical Epididymal sperm Aspiration (MESA)
- Non-Scalpel Vasal Sperm Aspiration (NSVSA)

For injection:
- Intra-Cytoplasmic Sperm Injection (ICSI)
Who are the candidates of ART?

* Female problems

* Male problems
What are the steps of ART?

Steps of ART:

1. Monitored hyperovulation
2. Oocyte retrieval
   - Oocyte vitrification
3. Oocyte culture
4. Extracorporeal insemination
5. Fertilization control
6. Embryo culture
7. Cryopreservation of zygotes due to OHSS risk
8. Embryo cryopreservation
9. Transfer to uterus after 2-5 days
10. Sperm retrieval:
    - Homologous sperm:
        - By ejaculation
        - By surgical retrieval (MESA-TESE-STW)
    - Heterologous sperm:
        - Sperm bank
11. 30-50 thousands motile spermatozoa in culture with each oocyte (IVF)
    - Microassisted (ICSI)
12. (AZH - biopsy)
PATIENT STIMULATION

SUPERIOR CENTERS

GNRH
ANALOGUES

HYPOTHALAMUS

GnRH

HYPOPHYSIS

LH

FSH

ENDOGENOUS

FSH

LH

EXOGENOUS

ESTROGENS
Female Problems.

Male Problems

Who are the candidates of ART?

US image of multiple ovarian follicles
Female Problems.

Male Problems

Who are the candidates of ART?

OOCYTE RETRIEVAL
Oocyte retrieval
Female Problems.

Male Problems

Who are the candidates of ART?

Syringes with cumulus-oocyte complex in follicular fluid
Oocyte culture

Oocytes have a higher chance of fertilization if insemination follows retrieval by 4-6 hours.
Extracorporeal insemination

- Sperm retrieval
- Sperm preparation
- Technique of insemination
Female Problems.

Male Problems

Who are the candidates of ART?

Technician with sperm preparation
ICSI

Day (0): Decoronization of mature oocytes before injection (MII)
ICSI

Day (0): Holding of a single sperm with the injection pipette
Intra-Cytoplasmic Sperm Injection
Day (0)
Fertilization control
Observation of zygotes
Day (1): Unfertilized oocytes
Observation of zygote

Day (1): Pronuclear stage embryo
Observation of zygote
Day (1): Pronuclear stage embryo
Female Problems.

Male Problems

Who are the candidates of ART?

Day (1) two cell embryo
Day (2): 4-cell stage embryo quality.
Day (4): Morula stage
Embryo transfer
GAMETE INTRAFALLOPIAN TRANSFER (GIFT)

Laparoscopy
What are the risks of ART?

- Risk due to ovarian stimulation
- Risk due to oocyte retrieval
- Risk due to embryo transfer
- Risk due to ICSI
What is the success rate of ART?

**IVF**
Deliveries per retrieval ................................................................. 29.1%

**ICSI**
In women < 35 years without male factor infertility ......................... 35.7%
In women > 35 years with male factor infertility .......................... 35.1%
In women < 40 years without male factor infertility ......................... 10.3%
In women > 40 years with male factor infertility ......................... 12.8%

**GIFT**
In women < 35 years without male factor infertility ......................... 34.9%
In women > 35 years with male factor infertility .......................... 22.2%
In women > 40 years without male factor infertility ......................... 09.1%
In women > 40 years with male factor infertility ......................... 11.1%

Female Problems.

Male Problems

Who are the candidates of ART?

Mechanical assisted hatching
Assisted hatching
Pre-implantation genetic diagnosis (PGD)

• The benefits of PGD in infertile couple.
• What is embryo biopsy?
• Who should have PGD?
Female Problems.

Male Problems

Who are the candidates of ART?

Embryo biopsy
What are the future prospectives in ART

Ovarian tissue cryopreservation