Subfertility management

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We need to keep in mind that the surgical and medical managements are complementary to each other and each patient needs a different plan.
Ovulation induction

What is ovulation induction:

It is the stimulation of ovulation by medication. It is usually used in the sense of stimulation of the development of ovarian follicles to reverse anovulation or oligoovulation.
Most common agent used? ▶
Clomifene citrate ▶
How does clomifene work? ▶
Induces gonadotrophin release by occupying the estrogen receptors in the hypothalamus, thereby interferes with the normal feedback mechanism increasing FSH secretion which stimulates the ovaries
Outcome? ▶
70% will ovulate, 15-20% will get pregnant, 10% risk of multiple pregnancies, Monitored by ultrasound to detect growth of follicles
Ovulation induction can also be induced by laparoscopic ovarian drilling

How is it done?
For unknown reasons passing electrical energy through Polycystic ovaries can induce ovulation

When is it done?
Only when medical treatment (clomiphene) didn’t work, because this is a surgical procedure with surgical and anesthetic risks
Ovulation induction can also be achieved by small dose of FSH

This requires follicular tracking by ultrasound to minimize the risk of multi follicular ovulation and risk of multiple pregnancies
Another way:
Intrauterine insemination (IUI)

Def: fertility treatment that involves placing sperm inside a woman’s uterus to aid in fertilization

How does it achieve that?
We increase the number of sperms that reach the fallopian tubes so increasing the chances of fertilization

How is it done?
We introduce a small amount of prepared sperms into the uterine cavity with a fine uterine catheter
Also usually this method requires mild stimulation with FSH to produce 2-3 mature follicles.

Outcome?
15-20% success rate in top fertility units
Now let's talk about: In vitro fertilization (IVF)

Def: is the process of fertilization by extracting eggs, retrieving a sperm sample, and then manually combining an egg and sperm in a laboratory dish.

How is it done?

First the ovaries are stimulated with FSH and encouraged to produce 8-10 follicles, then we induce ovulation with an injection of hCG, then we collect the eggs via ultrasound guidance with a very fine needle.

After all this we will fertilize the eggs in a petri dish with sperms or if required the sperms can be injected directly into the eggs (intracytoplasmic sperm injection).

Now after fertilization occurs, we place the embryos into the uterine cavity.

And 2 weeks after, we do a pregnancy test to check for successful implantation.

Outcome?

30% success rate in females below 35 years of age each cycle.
1. Stimulation of Ovaries
2. Egg Retrieval from Ovaries (Day 0)
3. Fertilization of Eggs (Day 0)
4. Embryo Culture (Day 0-5)
5. Embryo Transfer (Day 3-5)
6. Pregnancy Test (bHCG) 14 days after ET

In Vitro Fertilization - IVF

Freezing excess Embryos (Day 3-5)
Complications of IVF

- IVF still has the risk for miscarriage or ectopic pregnancies, actually IVF has a higher rate for ectopic than the general population (3-4)%

- Also the risk of what is called “Ovarian hyperstimulation syndrome”: Which presents as:
  1. ascites
  2. huge enlarged multifollicular ovaries
  3. pulmonary edema
  4. risk for multiorgan failure and coagulopathy

- So we need to pay real attention

- These patients are admitted to hospital and managed under strict protocols if they develop severe OHSS!!
Surgical sperm retrieval (Testicular sperm extraction)

Def: collection of sperms from a biopsy or several biopsies from testicular tissue after making a small incision in the scrotal skin. (if done successfully usually its enough for several cycles of treatment)

When is it done?

In the absence of naturally ejaculated sperm, what if we have problem in the quality? We do intracytoplasmic sperm injection

How do we do it?

Under GA or sedation we insert a fine needle into the epididymis or testicular tissue to obtain sperms.

Uses?

Can be injected into oocyte as part of fresh IVF/ICSI cycle or cryopreserved for use later on
Cryopreservation of gametes

Cryopreservation: is defined as using very low temperatures to preserve structurally intact living cells and tissues.

We can cryopreserve sperms and oocytes.

Why do we do it?

Very useful in preserving fertility for patients undergoing chemo or radio therapy.

Also used to store gametes from donors who wish to donate sperms or eggs.
THANK YOU