Infertility

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DEFINITION:

Failure of conception after one year of continuous marital life without use of contraception.

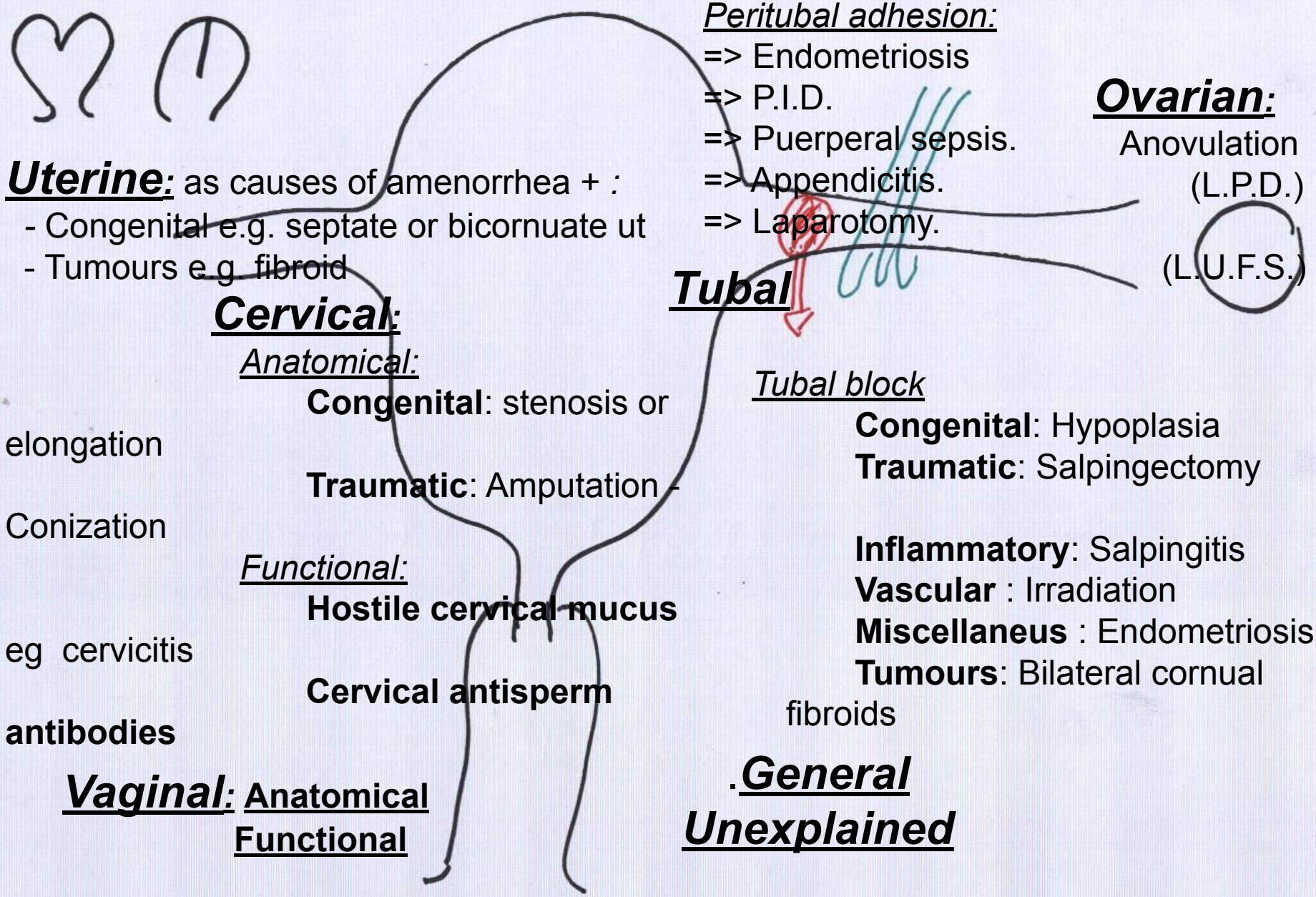
Primary infertility i.e. without previous history of pregnancy.
Secondary infertility i.e. with previous history of pregnancy.

AETIOLOGY:

FEMALE FACTOR

MALE FACTOR

COITAL FACTORS



Uterine: as causes of amenorrhea + :
- Congenital e.g. septate or bicornuate ut
- Tumours e.g. fibroid

Cervical:

Anatomical:

Congenital: stenosis or elongation

Traumatic: Amputation - Conization

Functional:

Hostile cervical mucus eg cervicitis

Cervical antisperm antibodies

Vaginal: **Anatomical**
Functional

Peritubal adhesion:
=> Endometriosis
=> P.I.D.
=> Puerperal sepsis.
=> Appendicitis.
=> Laparotomy.

Tubal

Tubal block

Congenital: Hypoplasia
Traumatic: Salpingectomy

Inflammatory: Salpingitis
Vascular : Irradiation
Miscellaneus : Endometriosis
Tumours: Bilateral cornual fibroids

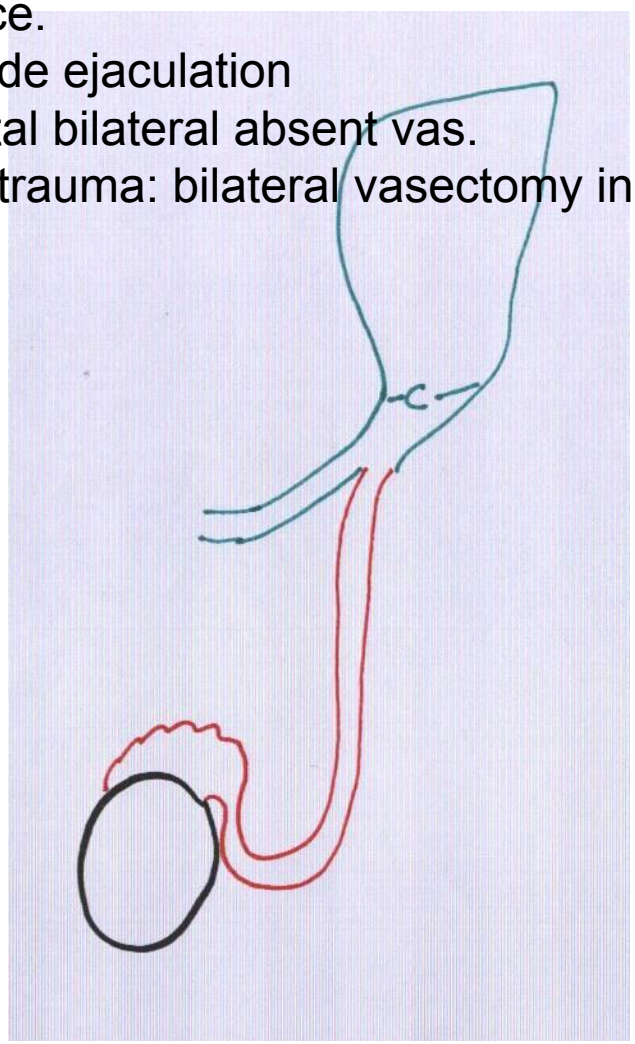
Ovarian:
Anovulation
(L.P.D.)

(L.U.F.S.)

.General Unexplained

↓ ***sperm transport:***

- Impotence.
- Retrograde ejaculation
- Congenital bilateral absent vas.
- Surgical trauma: bilateral vasectomy in repair of inguinal hernia



↓ ***spermatogenesis***

- Varicocele
- Undescended testis
- Mumps

Flow chart of infertility = investigation of a case of infertility

.History & Examination of both male & female partners

.Semen analysis

.Special investigations of the female

SEMEN ANALYSIS

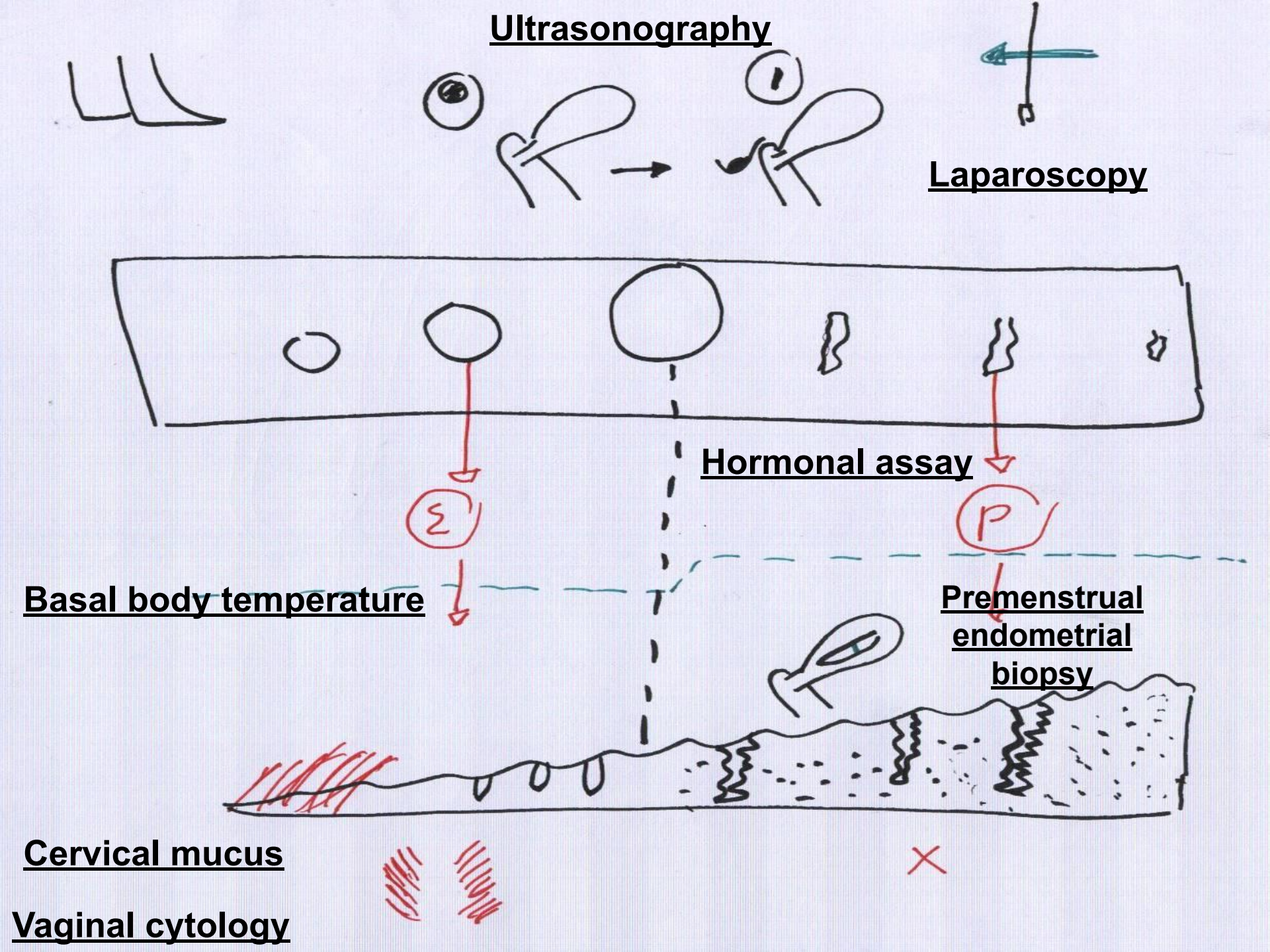
Normal results (W.H.O. 1999)	***Abnormal results***
- **Sperm count**: ≥ 20 millions / ml - **Motility**: ≥ 50% motile - **Morphology**: abnormal forms <30%	- Oligospermia: <20 million /ml - Asthenospermia: ↓ motility - Teratospermia: abnormal forms > 30 % - Necrospermia: Dead sperms - Azospermia: No sperms - Aspermia: No ejaculation

Diagnosis of Ovulation

A-Symptoms suggestive of ovulation:

- Regular cycles.
- Spasmodic dysmenorrhea
- Premenstrual tension.
- Ovulatory pain (Mittleschmers)
- Ovulatory spotting
- Ovulatory discharge (cascade)

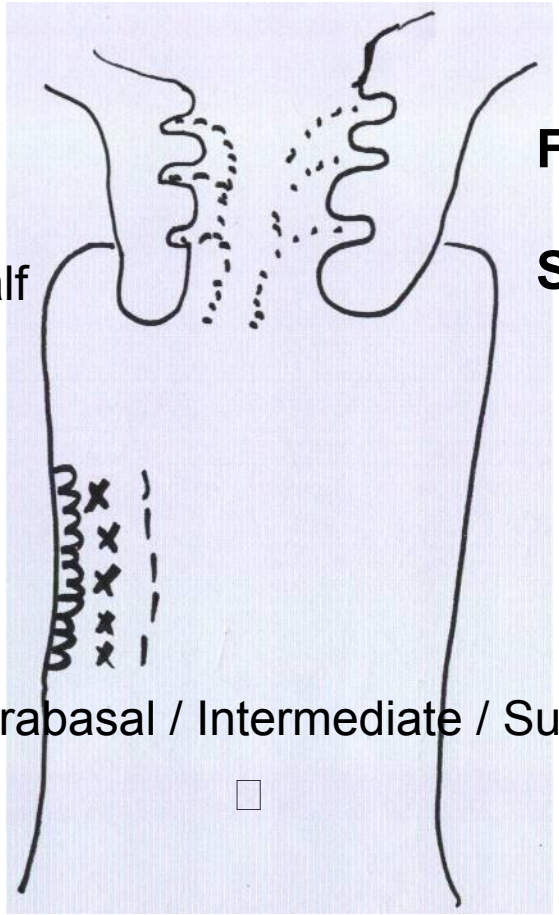
B-Tests to detect ovulation:


Ultrasonography
Laparoscopy
Hormonal assay
Basal body temperature
Premenstrual endometrial biopsy
Cervical mucus
Vaginal cytology

Cervical mucus

Fern: +ve in 1st half
= palm leaf pattern

Spinnbarkiet: +ve in 1st half
= stretched up to 7 cm



Fern: -ve in 2nd half

Spinnbarkiet: -ve in 2nd half

Vaginal cytology

Maturation index = Parabasal / Intermediate / Superficial cells

0/30/70 in 1st half 0/70/30 in 2nd half

Tests for tubal patency

Timing: Postmenstrual

Contra-indications:

Pregnancy

PID

Premenstrual

Postoperative (e.g. D. & C.)

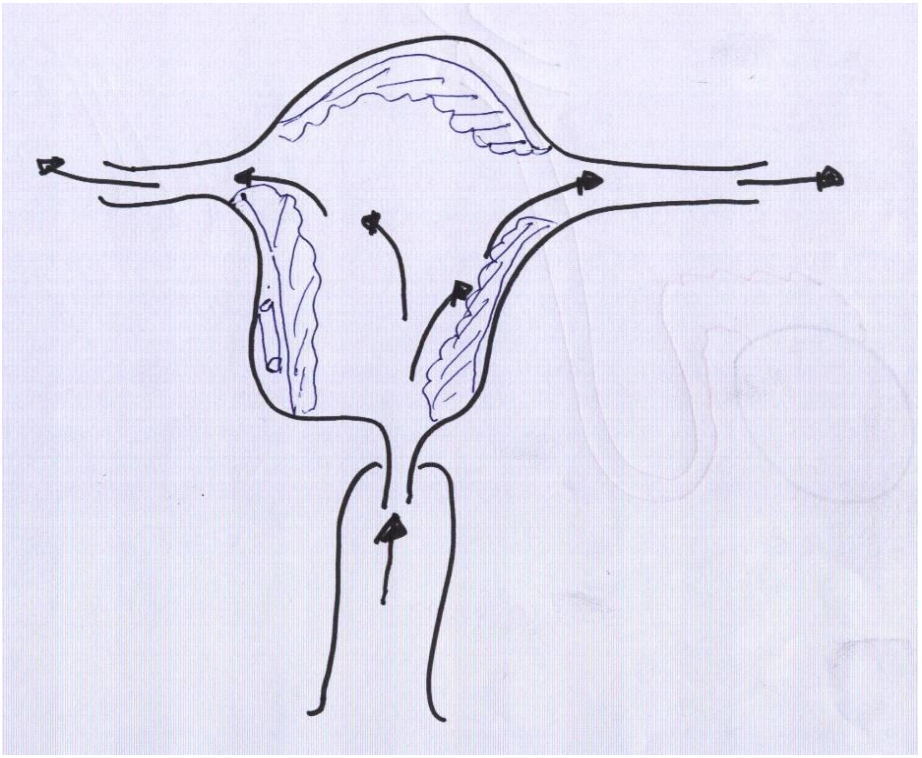
Complications:

1- Abortion

2- Infection

3- Endometriosis

4- Embolism



Rubbin insufflation test

Idea: Air or CO_2 → manometer
Results: If normal → Low gradient pressure changes

Kymography

As Rubbin insufflation test but pressure changes are recorded on a rotating drum

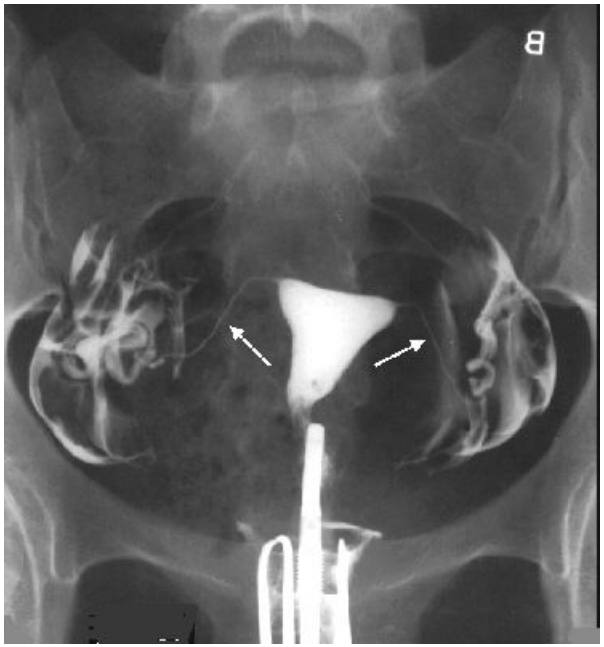
Saline sonohysterography

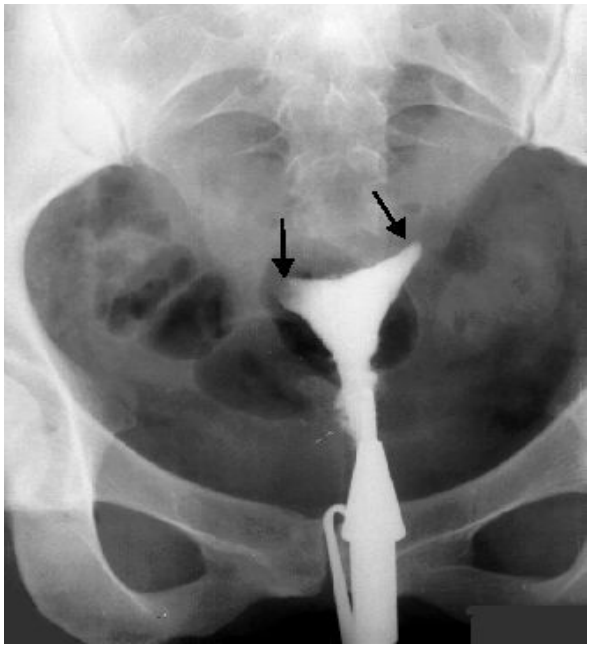
Idea: Saline → ultrasound
Results: If normal: No filling defect → patent tubes → minimal fluid in Douglas pouch

Hystero–salpingography

Idea: Radio-opaque material (lipidol OR Urograffin)
Two X-ray films are taken: => first film: after injection
=> second film: control film.

Results: If normal **First film**: - Patent tubes - No filling defect
Second film (control film): free peritoneal spill





Laparoscopy

Indications: 1- Hysterosalpingography: +ve
2- All investigations -ve but no pregnancy within 6 ms.

Idea: Methylene blue is injected by special cannula introduced into cx (under general anaesthesia)

Results: If normal dye comes from abdominal osteum of both tubes.

Value:

Diagnostic

Tubal causes: - Side & site of tubal obstruction - Hydrosalpinx
Peritoneal causes: - Peritubal adhesions - Endometriosis
Uterine causes: - Bicornuate uterus - Uterine hypoplasia
Ovarian causes: - Endometriotic cyst - P.C.O.

Therapeutic

1-Salpingostomy 2-Adhesolysis
3-Ovarian drilling 4-Ovarian cystectomy

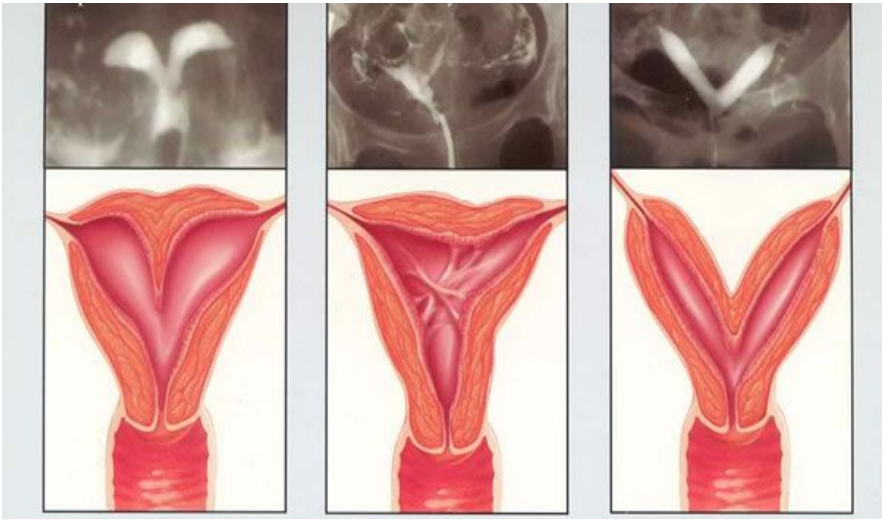
UTERINE FACTOR

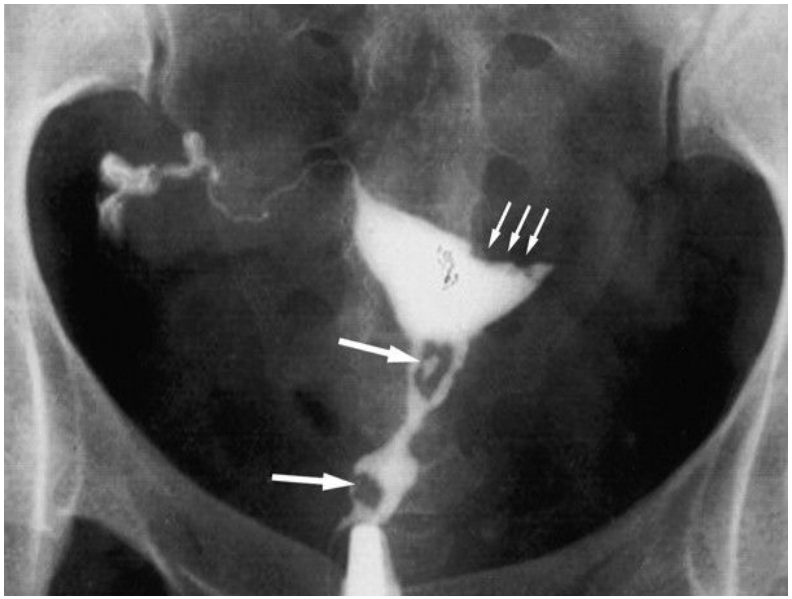
Ultrasound

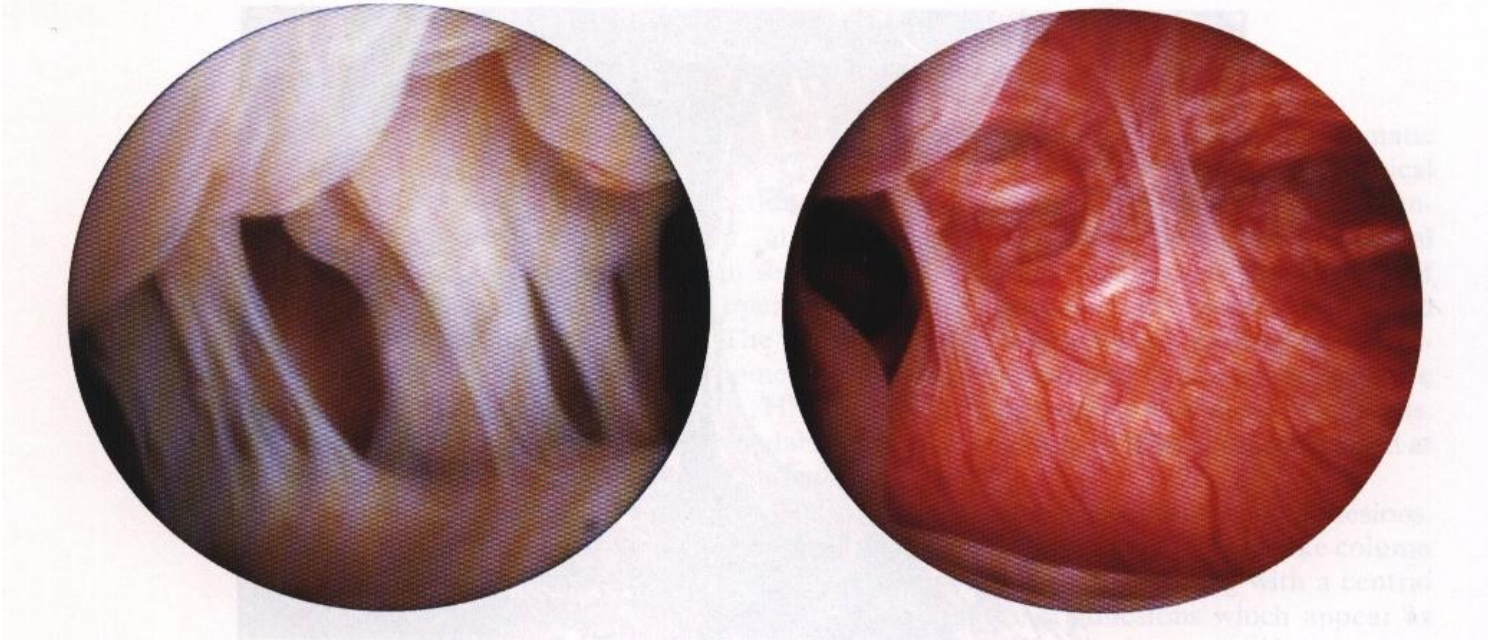
Hysterosalpingography & ***Saline sonohysterography***

Laparoscopy & ***Hysteroscopy***

Dilatation and curettage







CERVICAL FACTOR

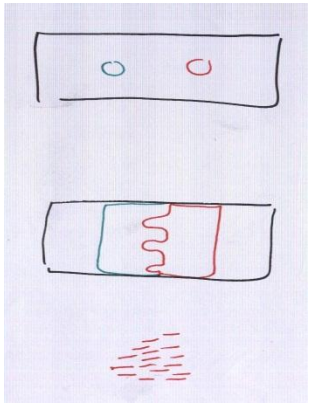
Anti-sperm antibodies (immunological infertility)

cervical mucus or maternal serum

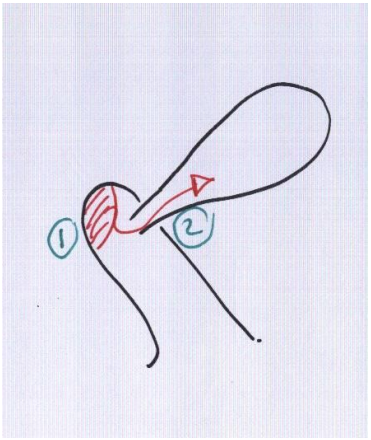
Tests for cervical mucus in peri-ovulatory period:

Penetration tests:

spearhead manner

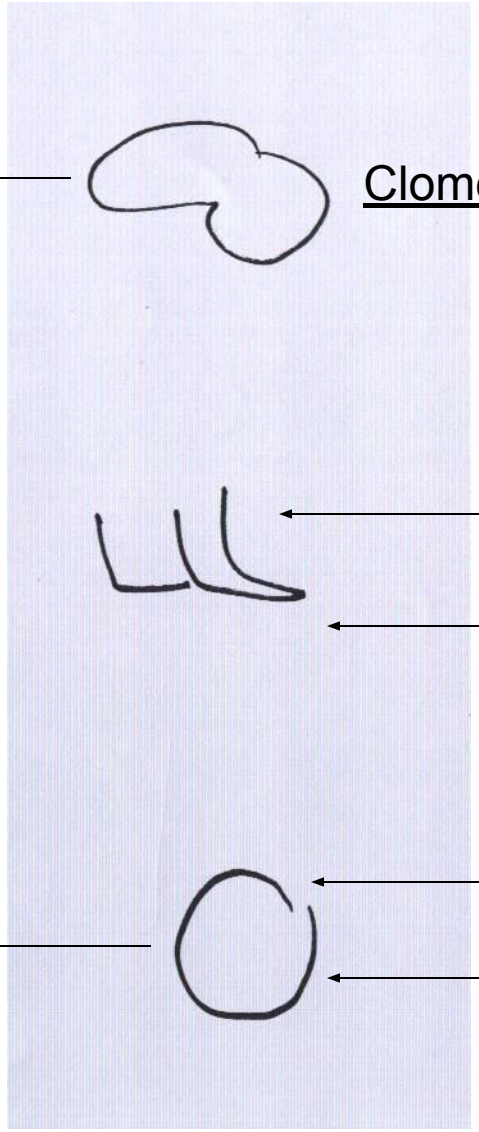


Post-coital test (P.C.T.):



Posterior fornix drop	*Cervical drop*	*Interpretation*
No sperm	No sperm	Failure of deposition
Dead sperms	No sperm	Hostile vaginal discharge
Living sperms	Dead sperms	Hostile cervical mucus
Living sperms	Living sperms	Normal

Induction of ovulation



Clomephene citrate

Tamoxifen

Cyclofenil

Cortisone

Bromocryptine

Clomephene citrate
+
HMG

GnRH

GnRH agonist

H.M.G.

Purified F.S.H

	1-Clomephene citrate (clomid)	2- (H.M.G.)
Mechanism:	It competes with estrogen at hypothalamus□hypothalamus is prevented from −ve feed-back inhib □ GnRH □ ↑ FSH□ ↑ follicules	Direct stimulation of the ovary
Indications :	1. Induction of ovulation e.g. polycystic ovarian disease. 2. Induction of super-ovulation e.g. ART 3. Luteal phase defect.	
Patient selection	- Intact axis. - Some function of ovary	- Defective pituitary. - Some function of ovary
Dose:	100 mg./day (tablet = 50 mg) from 5th day of cycle for 5 days Monitored by folliculometry If no response, the dose is increased by 50 mg/cycle (max: 250 mg/day)	1 − 2 Amp/day (Ampoule = 75 I.U. FSH + 75 I.U. LH) from 3rd day Monitored by folliculometry If good response i.e. dominant follicle 18-20 mm.□ H.C.G. 10.000 I.U. is given I.M. (as LH peak) to trigger ovulation
Side Effects	Blurring of vision - Breast Hot flushes - Headache Multiple pregnancy - OHSS	1-Ovarian hyperstimulation synd 2-Multiple pregnancy

Treatment of tubal factor: If unilateral □ Tuboplasty
If bilateral□ I.V.F.

Treatment of uterine factor

- Fibroid □ Myomectomy
- Septum □Hysteroscopic division
- Intra-uterine synechia□Hysteroscopic adhesolysis

Treatment of cervical factor

-Stenosis □Dilatation -Cervicitis □ Antibiotics
-Antisperm antibodies □ Condom+steroids for 6 months If failed
□3 times artificial insemination. If failed □ I.V.F. – E.T.

Treatment of general causes: e.g. correction of DM.

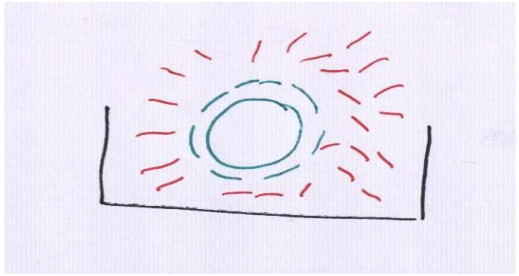
Treatment of unexplained infertility:

Condom + steroids for 6 months. If failed □3 times artificial insemination. If failed □ I.V.F. – E.T.

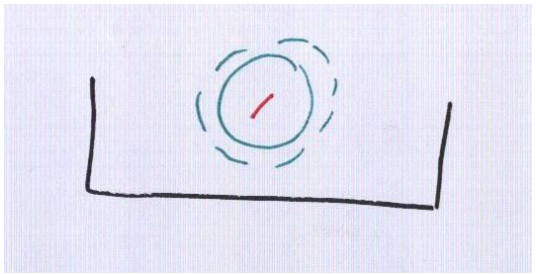
Assisted reproductive techniques

Indications: 1-Male factor 2-Cervical factor
3-Tubal factor 4-Unexplained infertility

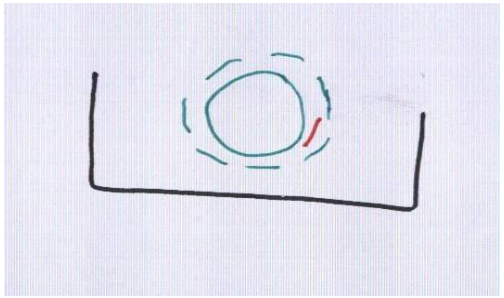
Techniques **-IVF-ET:** In Vitro Fertilization- Embryo Transfer
-ICSI: Intra Cytoplasmic Sperm Injection
-**SUZI:** Sub Zonal Sperm Injection
-GIFT: Gamete Intra Fallopian Transfer
-ZIFT: Zygote Intra Fallopian Transfer



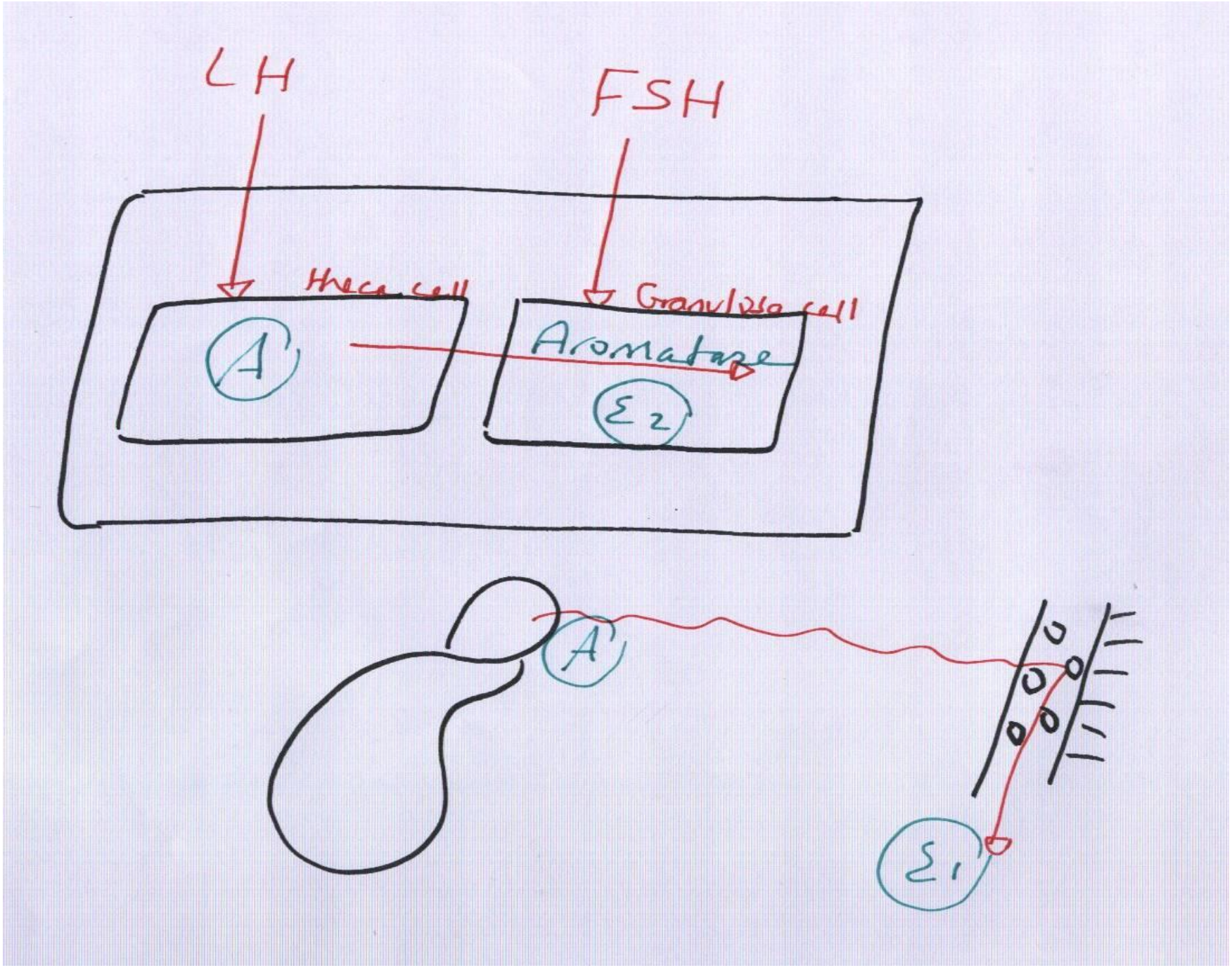
IVF



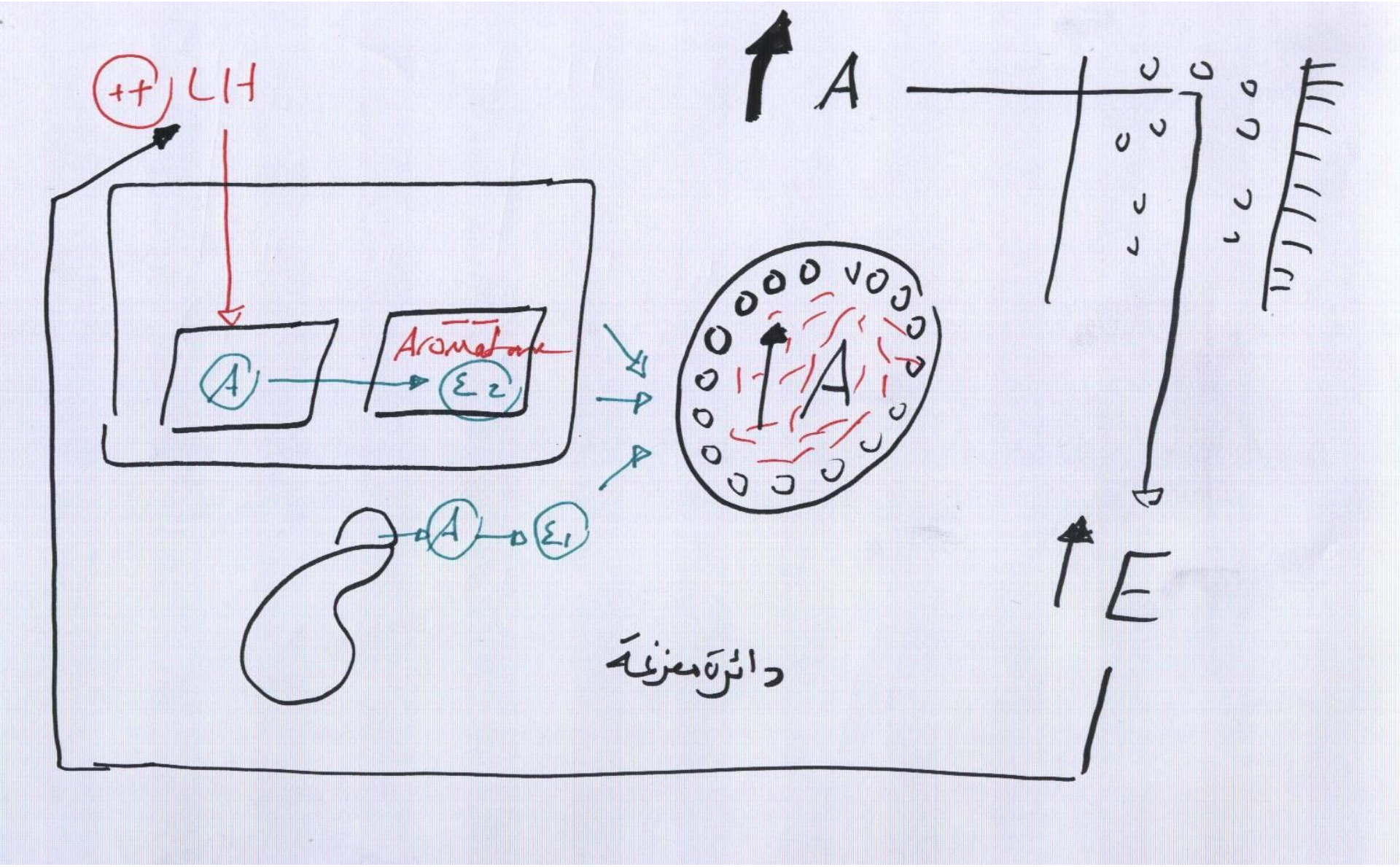
ICSI



SUZI


LH
FSH
Theca cell
Granulosa cell
A
Aromatase
Σ_2
A
Σ_1

Polycystic Ovarian Syndrome= P.C.O.



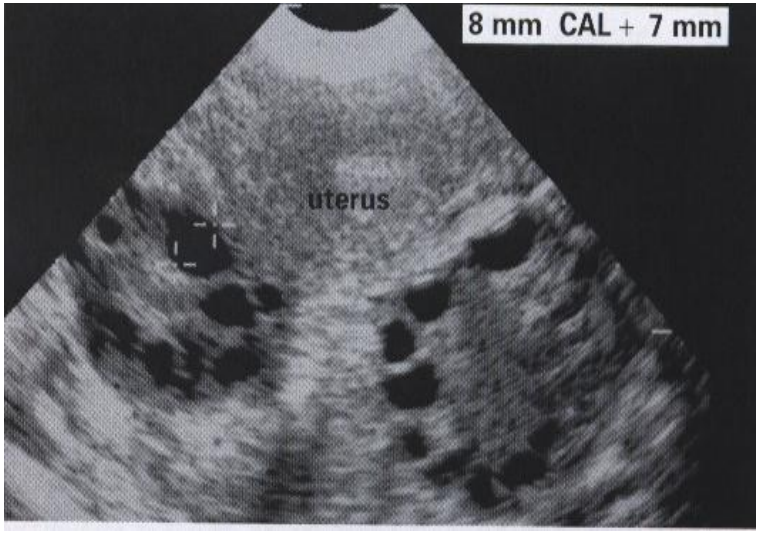
CINICAL PICTURE: (1) Amenorrhea & oligohypomenorrhea (2) Infertility.
(3) Hirsutism (4) Obesity

INVESTIGATIONS:

Hormonal profile: *High LH/FSH ratio *High androgen, estrogen
Ultrasound**:** Enlarged ovaries > 10 cm3 with necklace appearance
Laparoscopy: Enlarged ovaries with pearly white smooth appearance.

TREATMENT:

Weight reduction: for obese female
For Amenorrhea Cyclic progesterone
For infertility: **Induction of ovulation:**
Medical -Clomephene citrate -Purified FSH
-GnRH agonist HMG, HCG -Cortisone
Surgical if failed medical: => Laparoscopic ovarian drilling.
=> Bilateral wedge resection
For Hirsutism**:** **Anti-androgens** e.g. - Cyproterone acetate (anti-androgen)
Cosmotic i.e. epilation


8 mm CAL + 7 mm
uterus