



Pregnancy test and contraception

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Pregnancy Test

Pregnancy in simple terms is the period from conception to birth. This period is usually 40 weeks after the Last Menstrual Period (LMP)

Pregnancy Test (PT) attempts to determine whether a woman is pregnant.

Pregnancy test is a misnomer as most of the methods employed measure human chorionic gonadotropin(hCG) and not the presence of fetus

Different methods had been designed since the early times for the detection of pregnancy

HUMAN CHORIONIC GONADOTROPIN

Hormone secreted by the chorionic cells after fertilization of ovum.

Primary function is to support the corpus luteum until the placenta produces amounts of progesterone sufficient to support the pregnancy.

The hormone appears in urine and serum after 9 days of conception, reaches a peak between 7th and 12th week of gestation, after which it decreases

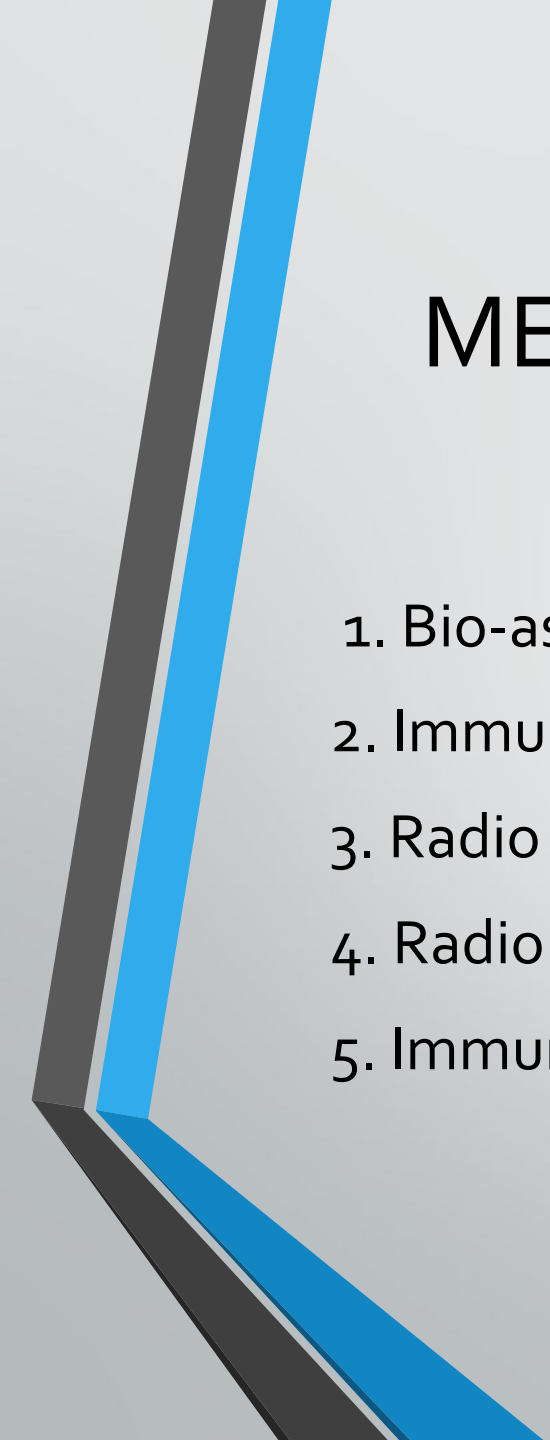
SPECIMEN

Urine first morning sample should be tested.

If stored in refrigerator, test within 72 hours.

For longer storage sample should be frozen at -20°C .

hCG concentration is expressed as mIU/ml.



METHODS FOR MEASURING β -HcgLEVEL

1. Bio-assays
2. Immuno-assays
3. Radio immuno-assays
4. Radio receptor assays
5. Immuno metric assays

Bio assays

In bio assays the test are performed by using experimental animals.

The biological test for pregnancy can be performed only after 2-3 weeks of conception, so that the concentration of hCG in urine is sufficient to show results.

Aschheim- Zondak test.

It depends upon the ovarian changes in in immature mice caused by hCG.

2 ml of urine from the women suspected to be pregnant is injected daily for 2 days into immature mice.

5 days after injection of urine the mice are killed.

The ovaries are examined for the presence of corpus leuteum and haemorrhage which indicates ovulation

Kupperman test

This test is the modification of aschheim-zondak test in order to save the animals.

In this an immature rat is used.

About 2 ml of urine is injected sub cutaneously into immature rat and ovarian changes observed after 6 hours.

If urine is injected intraperitoneally the ovarian changes can be observed within 2 hours.

Freidman test

In this tests, 10-15ml of urine is injected intra venously into rabbit and ovulation is observed by examining the ovaries after 48 hours

Hogben test

.In this test, about 20-30 ml of urine is concentrated and injected into the dorsal lymph sac of south african toad, *xenopus levis*. If hCG is present in urine it causes ovulation after 12 hours.

Galli-mainini test

In this test, 2 ml of urine is injected into the male amphibian (toad or frog). hCG in urine causes expulsion of spermatozoa within 2 hours.

Disadvantages of Biological Tests

1. The biological test require animals
2. Tests can be performed only after 2 to 3 weeks of pregnancy so that sufficient quantity of hCG is excreted in urine
3. Results are not obtained quickly; one has to wait for 2 to 48 hours
4. Tests involve tedious procedures such as sacrificing the animals



Immuno assay

Simple, expensive and rapid test

Based on antigen-antibody reactions

Commonly performed is Gravindex test

Latex particle agglutination inhibition assay

In his assay, latex particles coated with hCG serum and patients urine.

In pregnancy, the hCG in urine will neutralize with hCG, so there will be no agglutination with hCGcoated latex particle.

Thus no agglutination indicates a positive test (ie., presence of hCG in patients urine) and agglutination indicates a negative test.

The test performed on a slide and requires only a few minutes.

- Sensitivity :- 500-4000mIU/ml

Haem agglutination inhibition assay(HAI)

Similar to LAI, except that erythrocytes are coated with hCG instead of latex particles.

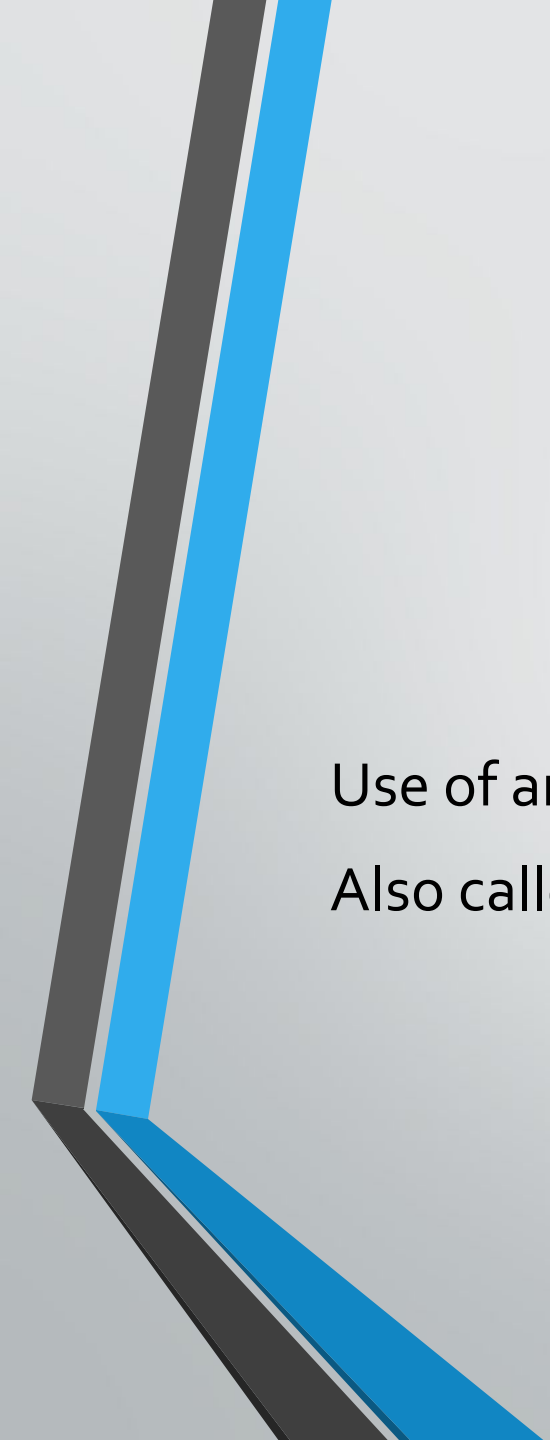
More sensitive than LAI test and can detect 150-4000 mIU/ml.

Direct agglutination test

In this test Ab to hCG is coated either on latex particles or on erythrocytes.
Therefore agglutination occurs in the presence of hCG in the patients urine.
Agglutination indicates a positive test.

Advantages-

- More Accurate
- Quick
- Easy, procedure is not cumbersome
- Performed on 5th day of conception
- Recently available pregnancy kit is in form of card



Contraception

Use of any method or device to prevent pregnancy.
Also called as fertility control, birth control

Methods

Rhythm Method-

Calendar method / safe period method / natural method.

Depend on time of ovulation.

Dangerous period – ovulation occurs on 14 day & ovum viable for 48-72 hrs & sperm remain alive for 24-48 hrs. so pregnancy can occurs

Safe period – rest of cycle i.e. 5-6 days after menstruation & 5-6 days before next cycle.

Advantage – most natural

Disadvantage – most unreliable when cycle are irregular & ovulation time is variable

Barrier Methods.

Mechanical – Prevent entry of sperms into uterine cavity

Females-Diaphragm.

Cervical caps.

Males- Condoms

Advantages.

- Inexpensive.
- Do not require medical consultation.
- Provide protection against STD.

Disadvantages.

- Demonstration by trained person needed for proper use.
- Failure most common – due to displacement of device.

Cervicitis (inflammation of cervix) & local irritation.

Chemical Method

Spermicidal agents.– destroy sperms.

- Ricinoleic acid
- Naoxynol-9.
- Octoxynol-3.

Available in different forms– foam tablet, pastes, creams, jellies & vaginal sponge

Advantages – inexpensive, well tolerated.

Disadvantages – local irritation & burning sensation.

ORAL CONTRACEPTIVE PILLS (OCP)

Recommended in women of younger age group (up to 35 yrs)

Mechanism of action.

- Synthetic preparation of estrogen & Progesterone.
- When taken orally, hormone level rises
- Negative feedback effect act on Anterior pituitary
- Inhibit Gonadotrophins (FSH & LH)
- Inhibit Ovulation.

Types.

- Combined pill.
- Sequential pill.
- Minipill pill.
- Postcoital (Morning After) pill.



Advantages– 100 % effectivity

Dis-Advantages. –

- Hypertension.
- Thromboembolism.
- Metabolic effects –diabetes & obesity.
- Carcinogenic effect – breast & cervix.

Contra-indications-

- Women having carcinoma of breast & uterus.
- Liver diseases
- Hyperlipidemia.
- Age group above 35 yrs.

Intrauterine contraceptive device (IUCD)

Mechanism of action.

- Prevents implantation & growth of ovum.
- By aseptic inflammation & causing endometrium not suitable for implantation.
- Sperm phagocytization – by neutrophils & macrophages.
- Cu affects enzymes, motility
- Makes cervical mucus thick prevent entry of sperm.

Types.

- 1st generation IUCD- Lippes Loop- serpentine or S shaped.
- 2nd generation Cu made

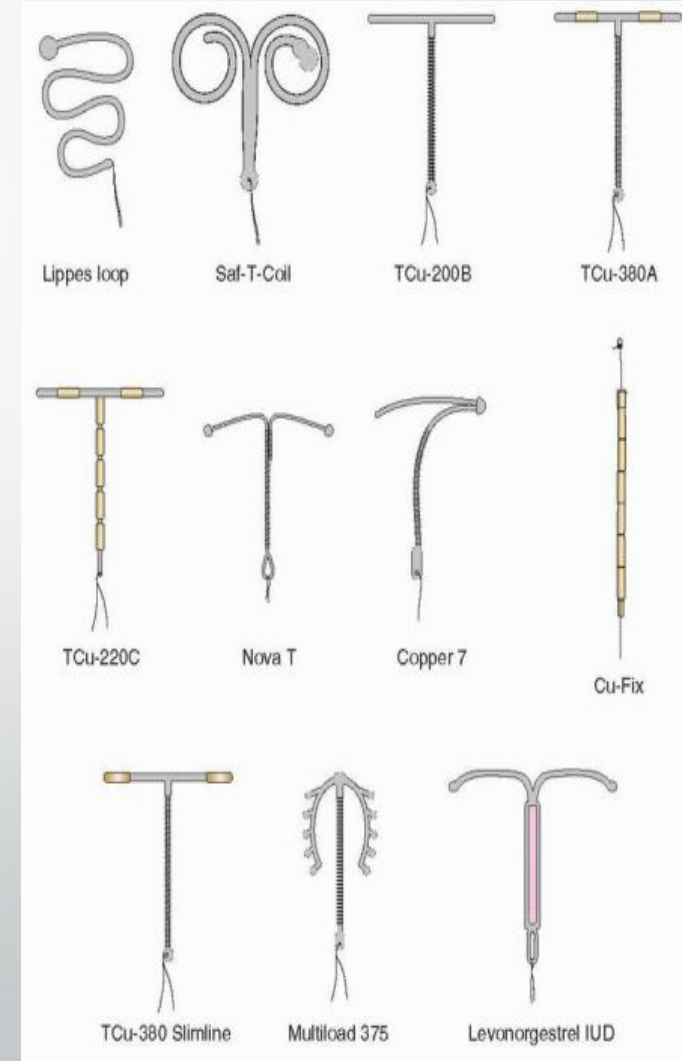
2 types.

- Cu T
- Cu T 200

Newer like NOVA-7, NOVA-T, etc

3rd generation.

- Hormone releasing containing progesterone reservoir release continuously for 1 yr





Advantages.

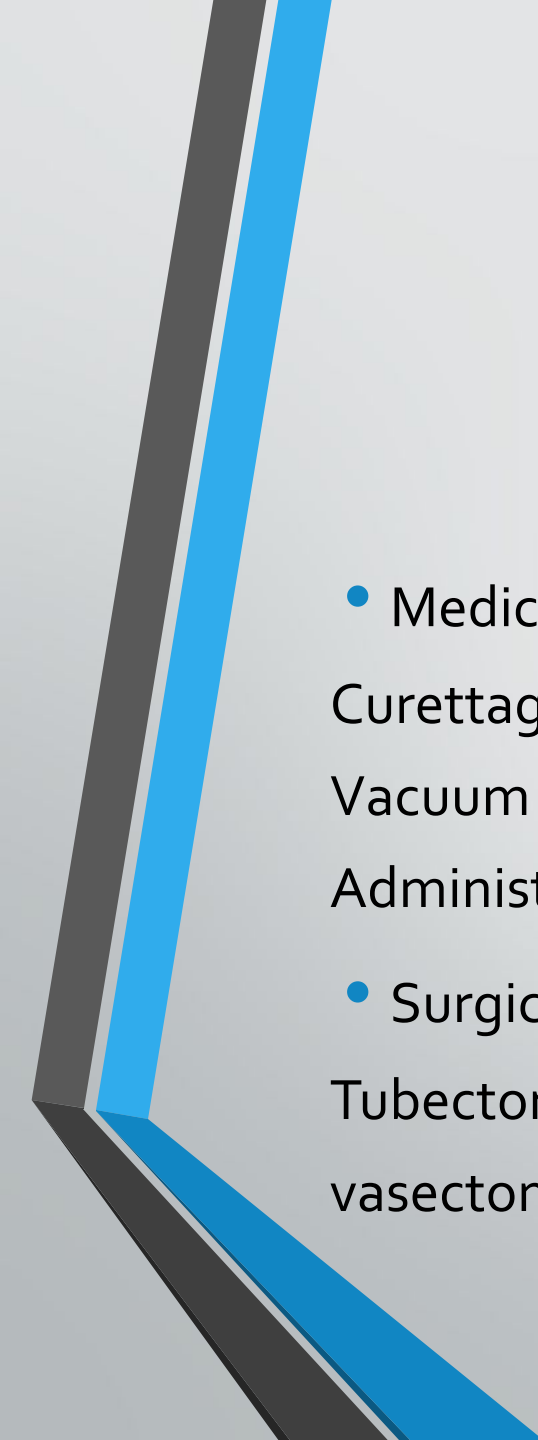
- Safe
- Effective
- Reversible
- Easily pulled out when not required.
- Long term contraception without adverse effect.

Disadvantages.

- May cause heavy bleeding.
- May come out accidentally.
- Risk of ectopic pregnancy.

Contraindications.

- Suspected pregnancy.
- Pelvic inflammation.
- Heavy bleeding during menstruation.
- Suffering from carcinoma cervix.

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- Medical termination

Curettage

Vacuum aspiration

Administration of prostaglandin

- Surgical method/ permanent methods

Tubectomy

vasectomy