CONTRACEPTIVE METHODS.

Health education and community pharmacy
Unit 5th

OBJECTIVES

- Aims of contraception
- Ideal contraceptive.
- Contraceptive methods in females.
  - Spacing methods
  - Terminal methods
  - Pregnancy vaccines.
- Contraceptive methods in males.
  - Spacing methods.
  - Terminal methods.
  - Miscellaneous methods.

Introduction.

- **DEFINITION :-**

  Prevention Of Pregnancy.

- **AIMS:-**

  Family Planning

  Prevents STD'S – AIDS.

  Medical Grounds – To control stress of pregnancy, labour & lactation.

The characteristics of an ideal contraceptive are listed below:

- Highly effective.
- No side effects.
- Independent of intercourse.
- Rapidly reversible.
- Cheap.
- Widespread availability.
- Acceptable to all cultures and religions.
- Administration and healthcare personnel not required.
- Easily distributed.

CONTRACEPTIVE METHODS IN FEMALES

- Spacing methods
- Terminal methods
- Pregnancy vaccines.

SPACING METHODS.

- Rhythm Methods.
- Barrier Methods.
- Chemical Methods.
- Intrauterine contraceptive devices.

Rhythm Methods.

- **Calender 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 occurs if coitus occur in this period.

Rhythm Methods.

- Safe period – rest of cycle i.e. 5-6 days after mensturation & 5-6 days before next cycle.
- Advantage – most natural
- Disadvantage – most unreliable when cycle are irregular & ovulation time is variable.

Barrier Methods.

- **Mechanical** .
  - Diaphargm. –
    - Flexible rim made up of spring.
    - Cup shaped synthetic rubber or plastic.
    - Inserted into vagina over the cervix.
  - Cervical caps.
    - Smaller than Diaphargm,
    - Applied on cervix itself.

Mechanical

- **Advantages.**
  - Inexpensive.
  - Do not require medical consultation.
- **Disadvantages.**
  - Demonstration by trained person needed for proper use.
  - Failure most common – due to displacement of device.
  - Cervicitis (inflammation of cervix) & local irritation.

Chemical

- **Spermicidal agents**.– destroy sperms.
  - Ricinoleic acid
  - Nanoxynol-9.
  - Octoxynol-3.
- Available in different forms– foam tablet, pastes, creams, jellies & vaginal sponge

(**TODAY** --Polyurethane sponge imprignated with nanoxynol-9.)

- **Advantages** – inexpensive, well tolerated, provide good protection.
- **Disadvantages** – messiness, local irritation & burning sensation.
- Combined

Chemical Methods.

- **Locally applied chemicals** – anti-spermicidal.
  - Foams, jellies.
- **Drugs** –
  - Steroidal –
    - Oral contraceptives and depot preparation.
  - Non-steroidal --

Steroidal

- **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.

Combined pill.

- **Contains both**
  - Oestrogen (ethyl estradiol/mestranol) 20-50 Mg.
  - Progesterone(norethisterone, norgestrel) 0.5-2mg.
- **Availability**
  - MALA-N (21 Tab) & MALA-D (28 Tab-7 ferrous fumarate)

Combined pill.

- **Dosage** –
  - Everyday orally at night for 21 days. (from 5th day to 25th day of cycle)
  - 7 day break for MALA-N
  - During this bleeding occurs, which is not menstrual bleeding but is withdrawal bleeding.
- Mechanism of action.
  - Prevents Ovulation.
  - Prevents Implantation.
  - Makes cervical secretions thick & viscid & prevent entry of sperm in female genital tract.

Sequential pill

- High dose of estrogen with moderate dose of progesterone.
- **Dose** – oestrogen 5th- to 15th day, then both oestrogen+progesterone for 5 days.
- High incidence of endometrial carcinoma so not used.

Mini-pill.

- Micro-pill.
- Only progesterone.
- **Dose** – daily through whole of menstrual cycle.
- **Action** – ovulation not inhibited but prevents fertility.
- Makes cervical mucosa thick & decrease motility of fallopian tube.

POSTCOITAL

- Within 72 hrs of unprotected intercourse.
- Dose – 2 combined pills immediately followed by 2 pill after12 hrs.
- Indication – only in emergency– rape, contraceptive failure, or unprotected sex.
- **Mechanism of action.**
  - Prevents fertilization & implantation by hypermotility of fallopian tube & uterus.
  - If ovulation & fertilization occurred then it prevents implantation of blastocyst.

OCP

- **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.

Depot preparation. Injectable

- Oily solutions given intramuscularly.
- Progestrin –
- Medroxyprogesterone acetate (DMPA) – IM every 3-6 months, 150-400mg.
- Norethindrone enanthate (NET-EN) – IM every 3 months , 200 mg.
- **Combined** –
  - Both estrogen & progesterone
  - IM , monthly .
- **MOA** –
  - Prevent ovulation & alter cervical mucosal secretions.

Sub-dermal implants

- **Types** –
- **Norplant** – 6 flexible silastic (silicon) tubes
  - 35 mg progesterone.
- **Norplant 2** – 2 rods of levonorgesterol
- Location – beneath skin of arm or forearm.
- Contraception – 5-6 yrs.

vaginal rings.

- Contains norgestrel.
- Progesterone absorbed through vaginal mucosa.
- **Advantages** –
  - No daily intake
  - Long lasting.
- **Dis-Advantages** –
  - Leads to sterility.
  - Alterations in menstrual bleeding pattern.

Non-steroidal contraceptives

- **Centchroman.**
  - Developed by Central Drug Research Institute (CDRI)
  - Trade name – Saheli
  - Dose – 30mg twice/week for 12 weeks followed by once in a week.
- **Mechanism of action**
  - Suppress corpus luteal function.
  - Interfere with motility of fallopian tube
- **Advantages.**
  - Menstrual cycle remains normal.
  - Complete reversibility after withdrawal..

Intrauterine contraceptive device (IUCD)

- **Ideal candidate.**
  - Has born one child.
  - Normal menstrual cycle.
  - No pelvic inflammation.
  - Ready to check the device.
- **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.

Intrauterine contraceptive device (IUCD) Types.

- **Non-medicated.**
  - 1ST generation IUCD.
  - Lippes Loop- serpentine or S shaped.
  - Made up of Plastic.

- **Medicated.**
  - 2nd generation Cu made
  - 2 types.
  - Cu T
  - Cu T 200
  - Newer like NOVA-7, NOVA-T
- **3rd generation.**
  - Hormone releasing containing progesterone reservoir release continuously for 1 yr.

Cu – T.

- Most commonly used .
- Made up of Cu.
- ‘T’ shaped attached with a nylon thread. (tail)

Method of insertion.

- Withdrawl method.
- Ideal time – during mensturation or within 10 days. (As cervical cavity diameter is more)
- Also during 1st after delivery.

IUCD

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

- **Disadvantages.**
  - May cause heavy bleeding.
  - May come out accidently.
  - Risk of ectopic pregnancy.

- **Contraindications.**
  - Suspected pregnancy.
  - Pelvic inflammation.
  - Heavy bleeding during mensturation.
  - Suffering from carcinoma cervix.

Terminal methods.

- Permanent method.
- Indication.
  - When family is complete.
  - Medical grounds.

Terminal methods.

- Surgical methods.
- **Tubectomy.**
  - Fallopian tubes identified , cut , cut ends ligated & buried.
- **Laparoscopic occlusion.**
  - Tubes occluded using silicon rubber bands, rings or clips
  - Method – quicker, simple, no hospitalization.

MEDICAL TERMINATION OF PREGNANCY.

- Medical termination of pregnancy or MTP or abortion is allowed under MTP act 1971.

- **Criteria**.
  - Person who can do MTP
  - Place where it should be performed.

MEDICAL TERMINATION OF PREGNANCY.

- **Indications.**
  - Medicals – continuation of pregnancy is hazardous to the mother.
  - Eugenic – substantial risk to the child if born.
  - Humanitarian ground.– when pregnancy is result of rape.
  - Failure of contraceptive methods.

MEDICAL TERMINATION OF PREGNANCY.

- **Methods –**
  - **Dilatation & curettage (D & C).**
    - Cervix dilated with dilator & implanted ovum removed by curettage of the endometrium.
  - **Vacuum aspiration. (up to 12 weeks)**
    - Same cervix is dilated & contents are aspirated by vacuum / suction.
  - **Administration of prostaglandins.**
    - Prostaglandins are administered intravaginally
    - Causes uterine contractions – expulsion of product of conception.

Dilation and Evacuation Abortion (D&E) of a 23 Week Old Fetus

Uterus
23 week fetus
Placenta
Umbilical cord

A. The body parts are grasped at random with a long toothed clamp.

Large toothed grasping clamp

Cut-away view of mother's pelvis

B. The body parts are pulled from the fetal body out the vaginal canal.

70mm fetal forearm

C. The remaining body parts are grasped and pulled out.

D. The head is grasped and crushed in order to remove it from the vaginal canal.

E. The placenta and remaining contents are suctioned from the uterus.

Dilation and evacuation

Uterus

Amniotic sac

Vacuum uni

Suction tub

Speculum

Pregnancy vaccines.

- Under experimental trials.
- 2 types.
  - **Active immunization.**
    - B subunits of HCG – antibodies against beta HCG destroy HCG produced by syncytiotrophoblast.
    - Tetanus toxoid – increases antigenecity capacity.
  - **Vaccine against Zona Pellucida proteins**

CONTRACEPTIVE METHODS IN MALES

Methods

- **Spacing methods.**
  - Natural.
  - Barrier.
  - Chemical.
- **Terminal methods.**
- **Miscellaneous methods.**

Spacing Methods

- **Natural Method (Coitus Interruptus)**
  - Oldest method of voluntary fertility.
  - Male withdraws penis before ejaculation into vagina.
  - Failure rate – high
    - As precoital secretions may contain sperm & even a drop is enough to cause fertilization.
    - Wrong Timing of Withdrawl

Barrier method–

- Condom
- Most widely used.
- Made up of fine latex sheath.
- **Instructions** –
  - Should be worn on erect penis before intercourse.
  - Air must be expelled
  - Held carefully when withdrawing from vagina.
  - A new condom should be used for each sexual act.

Barrier method

- **Mechanism of action,**
  - Prevents deposition of semen into vagina.
- **Advantages** –
  - Easily available , safe, inexpensive
  - Use dose not require medical supervision.
  - Provide protection against STD.
- **Dis-advantage**
  - May slip off or tear off.
  - Interfere with sexual sensation.

Chemical method.

- **Antispermatogenic Drugs – inhibit spermatogenesis.**

1. Male pill (Gossypol)
2. Hormonal preparation
   -- Testosterone
   -- Testosterone with Danazol
   -- Cyproterone acetate
3. calcium channel blocker-- Nifedipine

Male pill (Gossypol)

- **Composition** – Gossypol, phenolic derivatives of cottonseed oil.
- **Dose** – orally. 200mg/D.– 2 months followed by 60mg/wk.
- **Mechanism of action** – exact action not known.
- Causes azoospermia.
- **Advantages** – neither hormone nor antihormonal activity
- No change in libido & potency.
- **Disadvantages** – permanent azospermic after 6 months

Hormonal preparation

- **Testosterone**
  - 400 mg orally causes azospermia.
- **Testosterone with Danazol.**
- **Cyproterone acetate.**
  - Related to progesterone.
  - Potent anti-androgenic agent.
  - Causes oligozoospermia & loss of libido.

Calcium channel blockers.

- Block Ca channel on cell membrane of sperm.
- Prevents Ca influx – membrane becomes rigid & loaded with cholesterol.
- Rigid membrane prevents its binding to Zona Pellucida.
- So patient on Ca channel blockers (Nifedipine) for hypertension becomes sterile.

Terminal methods.

- Vasectomy
- Vas Occlusion with No-scalpel technique

1. Elastomeric Plugs
2. SHUG
3. RISHUG

Vasectomy

- One cm vas deference removed after clamping.
- Both ends ligated & sutured.
- Mechanism of action – entry of sperm into semen prevented.
  - Sperm production & hormones not affected.

Vasectomy

- **Post-operative instructions** – use contraceptive measures (condom) as he is not sterile ,after 30 ejaculations semen is free from sperm.
- **Advantages.**—
  - Simple, fast, less expensive & no hospitalization.
- **Disadvantages.**
  - Failure rate -0.15%
  - Spontaneous recalalization.
  - Autoimmune response.

No scalpel vas occlusion.

- Newer technique.
- Safe, convenient & acceptable
- **Principle** – Elastomer injected get hardened insitu within 20 min & occlude it.
- **Methods**
  - Elastomer plugs.
    - MEDICAL GRADE POLYURETHANE (MPU)
    - MEDICAL GRADE SILICON RUBBER(MSR)
  - **SHUG** – preformed silicon plug used.
  - **RISUG** – reversible inhibition of sperm under guidance.

Miscellaneous methods.

- **Hot baths.**
  - Hot bath (46^0 for few weeks.)
- **Suspensories.**
  - It holds testes close to the body.
- **Insulated scrotal sack**

THANK YOU