20 Contraception

- Contraception used as voluntary control of fertility.
- choice of contraception: efficacy, safety, non contraceptive benefits , cost and personal consideration.
- **Ideal contraception**:
  1. Highly effective.
  2. No side effects or risks.
  3. Cheap.
  4. Independent of intercourse and requires no regular action on the part of the user.
  5. Non-contraceptive benefits.
  6. Acceptable to all cultures and religions.
  7. Easily disributed and administrated by non-healthcare personnel.
  8. 100% effective.
  9. Completely reversible.
  10. Absolutely free of side effect.
- **Failure rates:**
  -All methods will occasionally fail.
  -Depends on two factors:(1)How it works (2)How easy its to use.
  -Failure rate for some methods vary: poor use, user failure.
  -COC the effectiveness is high due to inhibition of ovulation (forget pills).
  -IUS and implanon: very effective , require the user to remember anything.
- **Efficacy:**
  -Long term evaluation of a group of sexually active women using a particular method for specified period to observe how frequently pregnancy occur.
  -A pregnancy rate per 100 women per year.
  -Pearl formula: Number of pregnancies / total number of months contributed by all couples x 1,200.
- **Contraception:**
  Natural methods
  LAM
  Combined contraception
  Progestogen –only contraception
  Barrier methods
  Intrauterine contraceptive device
  Emergency contraception
  Sterilization

Lactational amenorrhoea

- Breast feeding delays the resumption of fertility.
- Length of delay is related to the frequency and duration of breast feeding.
- Fully breast feeding and remains amenorrhoeic in the first 6 months (less than 2%).
- Not a practical method.
- Can be used in areas where moderen methods of contraception may be expensive.

Natural method

- Conception can occur in certain days of the cycle.
- Abstinence from intercourse during the fertile period.
- Success dependant on the accurate prediction of the ovulation.
- Only type of contraception acceptable to some couples for cultural and religious reasons.

Natural family planning

- Ovulation prediction.
- Change in basal body temperature, changes in cervical mucus, tracking cycle days.
- Kits, Persona, urinary hormones.

Combined hormonal contraception(CC)

- **Estrogen**: **ethynil estradiol**.
- **Progesteron**:

-Second generation(**nortestosterone** and **levonorgestrel**)
-Third generation(**desogestrel** and **gestodene**)
-Fourth generation-antiandrogenic (**drospirenone**,**dienogest**)

- **FR**: **0.3%**
- **Positive health benefits:**
  1. Light pain-free regular bleeds.
  2. Improve premenstrual syndrome.
  3. Reduce risk of PID.
  4. Long term protection against ovarian and endometrial cancer.
  5. Treatment of acne.
  6. Reduction of formation of benign ovarian cysts.
  7. Improvement of endometriosis.
- **Risks of CC**:
  1. Cardiovascular effects.
  2. 3-4 fold increase of VTE in CC users.
  3. Unaffected by age, smoking, or duration fo use.
  4. Higher in obese women and history of PIH.
  5. Third generation associated with two fold increase in risk of VTE.
  6. Risk is greatest during the first year of use.
  7. To unmasking of inherited thrombophilias.
  8. **Arterial disease**: less common/more serious/ Related to age and smoking/ Increase for second not third generation/ Dose dependent: lower dose of estrogen has no increase in risk.
     - **Ischemic stroke** : two fold increase in risk
     - **Haemorrhagic stroke**: the risk is unchanged.
  9. **Malignant disease**:
     - **Breast cancer**: small increase in risk 10 years after stopping the pills.
     - **Ovarian cancer**: > 50 % reduction in ovarian.
     - **Endometrial cancer**: protection related to duration.20% after one year , 50% after 4 years and sustained for 15 years after stop.
     - **Cancer of cervix**: increased risk (greater sexual activity)

-Recent meta analysis: patients with persistent infection with HPV **> 5 years** had increased relative risk of: **2.8**
> 10 years: **4**.

  10. **Trophoblast disease** : no data.

- **Contraindication of CC**:

1. Breastfeeding.
2. Smoking.
3. Age.

4. Multiple risk factors for cadirovascular disease:
5. Hypertension: 160/100.
6. Hypertension with vascular disease.
7. Current or history of deep vein thrombosis.
8. Major surgery with prolonged hospitalization.

- **Absolute contraindication**:

1. Past arterial or venous thrombosis.
2. Focal migraine.
3. TIA.
4. Thrombophilias.
5. Active liver disease.
6. Liver adenoma, gallstones.
7. Pregnancy and estrogen dependant neoplasm.

- **Patient management**:

1. Detailed medical and family history.
2. Blood pressure.
3. Wighting,Breast and pelvic examination.
4. Give it for three months then review in 6-12 monthly review.
5. Clear advise about what to do if they miss any pills.
6. It can be continued until age of 50 years in healthy women.

- **Practical prescribing**:

1. Effectiveness is reduced by anticonvulsants, antifungals , antiretrivirals and antibiotics.
2. Induce liver cytochrome P450→reduce the efficacy.
3. Higher dose of estrogen, change the medication.
4. CC increase the clearance of medications.
5. Lamotrigine →reduce serum level.
6. Dose should be adjusted.

- **Side effect**:

1. Breakthrough bleeding.
2. Headache.
3. Wight gain (no evidence).
4. Loss of libido.
5. Fluid retention.
6. N&V.
7. Cholasma.
8. Breast enlargement.

- **Forms**:

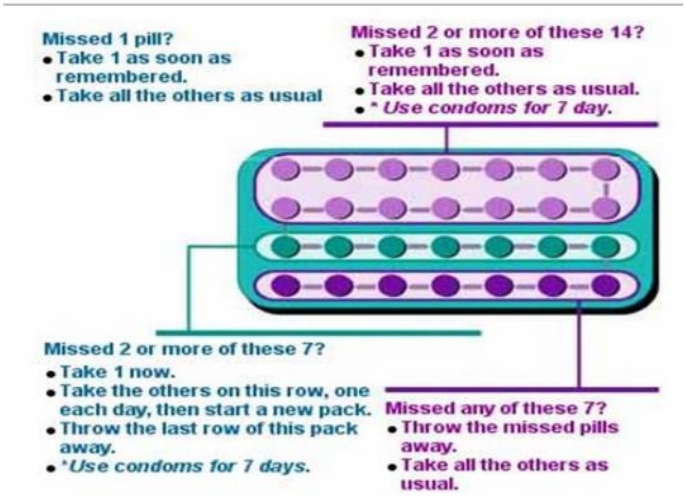
1. Oral.
2. Transdermal(contraceptive patch).
3. Systemically(combined injectables).
4. Vaginal routs(contraceptive vaginal ring).

Oral COC

- Two steroids hormones:
  (1)Estrogen EE20-50 microgram.
  Low dose pills (20-35 microgram), safer.
  Estradiol valerate.
  (2)synthetic progesterone>

-Second generation(**nortestosterone** and **levonorgestrel**)
-Third generation(**desogestrel** and **gestodene**).
-Fourth generation,antiandrogenic(**drospirenone**,**dienogest**)

- Pills with **levonorgestrel** is associated with the **lowest VTE** risk.
- **Dianette** contains **antiandrogen** , useful for **acne** treatment.
- 21 days followed by 7 day break.
  Monophasic: every pill contains the same dose of steroids
  Biphasic , triphasic and tetraphasic.
  The dose of both steroids changes during the cycle.
  Reduce the SE of progesterone.
  No evidence of better cycle control.
  Newer brands (24/4,84/7,365).
- **Mechanism of action** COCP:
  1. Inhibition of ovulation.
  2. Inhibit FSH, suppress the follicular development.
  3. Inhibit LH, prevention of ovulation.



Transdermal
20 cm2.
20 µgEE and 150 µg norelgestromin daily.
Each patch last for 7 days, three patches / month.
Efficacy might be reduced by overweight.
More expensive than oral.
Better compliance.

Vaginal ring
NOVARING
15 microgram EE and 20 microgram etonorgestrel daily.
Soft ethylene-vinyl-acetate copolymer.
3 weeks – 7 days ring-free interval.
Same risks and benefits.
More expensive.

Progesterone only contraception

- **Advantages**:

1. No effect on VTE.
2. Minimal impact on lipid profile.
3. Can be used in most cardiovascular diseased except current severe arterial wall disease.
4. Lactating woman.
5. Protects against endometrial cancer.
6. Symptomatic relief of dysmenerorrhoea.
7. Protect against endometriosis, uterine myomas.

- **Disadvantages**:
  1. Menstrual disturbances.
  2. Injectable))Amenorrhoea.
  3. Functional ovarian cysts.
  4. Ectopic pregnancy.
  5. Acne,headach,breast tenderess and loss of libido.
- **Contraindication**: Current breast cancer.
- **Side effects of POP**:
  1. Malignant disease.
  2. Protects against endometrial cancer.
  3. No data about ovarian cancer, cervical cancer.
  4. Increase risk of breast cancer ,1.17 %,injectable.
- **MOA**:
  1. Cervical mucus modification.
  2. Endometrial modification.
  3. Suppression ovulation.
- **Types**:
  1. POP
  2. Injectable
  3. Implants
  4. IUS

Oral(POP)

- **Old** generation : thicken the cervical mucus , not inhibit ovulation.
- **New**: third generation: desogestrel(Cerazette) : inhibit ovulation Same time, no break.
- **Old** generation : delay not more than 3 hours.
- **New** generation:12 hours.
- The efficacy is largely dependent on compliance.
- **Failure rate** is 0.3-4 per HWY.
- **Mechanism of action:**
  -Local effect on cervical mucus.
  -The endometrium(thin and atrophic).
  -Higher doses will inhibit ovulation.
- It is extremely safe, and can be used if woman has CVS risk factors.
- **Particular indication: breast feeding and old age, CVS risk, smoking, diabetes**.

Injectables

- **Two types**:
  (1)**Depo provera** 150 mg , 12 weeks.
  (2)**Noristerat** (norethisternoe enanthate 200 mg).
- Lasts for 8 weeks , rarely used.
- **Depo provera**:
  -Depot medroxyprogesterone acetate.
  -Deep IM injection, 150 mg Q 12 weeks.
  -Suppress ovulation.
  -Cervical and endometrial effect.
  -<0.5 per HWY.
  -Micornized preparation , SC,104 mg.
  -Side effect of depo provera:
  Wight gain 2-3 kg.
  Delay in return of fertility,6-7 months.
  Persistently irregular cycle, most will become amenorrhoeic 70 %.
  Associated with small reduction of BMD, recovered after discontinuation.

Subdermal implants

- **Norplant**: six rod system, not available.
- **Implanon**:
  - Single rod of 68 mg of etonogestrel.
  - Triceps of the non dominant arm.
  - 3 years.
- Suppressing ovulation, cervical mucus and endometrial effect.
- Needs to be implanted and removed by trained personnel.
- FR less than 1 in 1000 over 3 years.
- No compliance problems.

IUS

- **Mirena**.
- 52 mg levonorgesrel releasing 20 microgram/day for 5 years.
- Used for management of heavy menstrual bleeding.
- 70-95% reduction in menstrual bleeding.

Intrauterine contraception

- Most commonly used reversible method of Contraception.
- Marked inflammatory rx.
- Increase concentration of macrophages prostaglandins.
- Toxic for sperm ,ovum and interfere with sperm transport.
- FR less than 1%.
- Ideal for medium to long term method of contraception.
- Independent of intercourse.
- Regular compliance is not required.
- Protects against intrauterine and ectopic pregnany.
- Higher chance than normal that it will be ectopic.
- Types:
  1. **innert**
  2. **Copper**:
     - framed or frameless (gynefix)
     - Surface area of cupper 300-380 mm2
     - Prevent fertilization and implantation
     - 5-10 years
     - 40 years →menopause
  3. **Hormone releasing (Mirena)**:
     - plastic frame with 52 mg levonorgestrel reservoir 20 microgram per 24 hours over 5 years.
     - Atrophy of the endometrium →implantation.
     - Thickening of cervical mucus.
     - 5 years
     - 45 years →menopause.
     - Treatment of menorrhagia (reduction of blood loss during menses).
     - Rare side effects (low blood levels of LNG).
- **Insertion of IUCD**:

Any time, limited to the first 7 days of the cycle
Postpartum: 4 weeks

Miscarriage: immediately, second trimester miscarriage the risk of expulsion is higher.
Removal: during menstruation.
Menopausal : 1 year after the LMP if more the 50 years 2 years at 40 years or later.

- **Contraindication of IUCD:**

1. **History of malignant trophoblastic disease**
2. **Endometrial cancer**
3. **Pelvic TB**
4. **Current STI or pelvic inflammatory disease**
5. **Unexplained vaginal bleeding should be investigated Distorted cavity : may make insertion difficult**
6. **Cupper allergy**
7. **Endomterial and cervical cancer**

- **Complications:**

1. Dysmenorrhoea
2. Menorrhagia: 3-6 months due to the effect of local PG, 15% discontinuation rate
3. Uterine perforation: 2 in 1000
4. Expulsion: 1 in 20
5. Pregnancy: rare
6. Early and mid trimester Pregnancy loss and preterm delivery
7. Ectopic pregnancy: absolute risk is low, 1.5 per 1000 years of IUD use.
8. Infection: over estimated
    - first 20 days ,1%
    - Detailed sexual history has to be taken
    - Full screening and antibiotic treatment for high risk groups if screening is limited
    - Long term risk is similar to that of women who are not using any contraception
    - Risk reduced by using aseptic techniques
    - No multiple partner
    - Mirena: lower risk because of the protective effect of the hormones.
    - IUD should be removed if no response within 48 hours.
9. Lost thread
10. Drawn up in the cervical canal
11. Expelled
12. Spontaneous expulsion is common in first year, , during menstruation, risk is 1 in 20
13. Migrated outside the uterus(unrecognized perforation) Ultrasound X ray

Spermicides

- Nonoxynol 9
- Gel, cream, foam , pessary
- For use with female diaphragm and caps, not male condom
- Provides some protection against STI
- Frequent use of N-9 might increase the risk of HIV transmission
- High risk patients should not use it

Barrier methods

Physically interrupting the progress of sperm in the female reproductive tract.
Condoms for males.
Females: Occlusive pessaries, caps, sponges and vaginal condoms in combination with spermicides.

Condoms

One of the most popular
Fine latex rubber
Sizes and textures
Accessible,inexpensive
Protects against the STD(HIV) and carcinoma and premalignant disease of the cervix.
3-23 per HWY
Contraindicated : latex allergy.

Female condom

Polyurethane sheath
Lines the vagina
One size, single use and expensive
Not popular
5-21 per HWY

Occlusive pessaries

DIAPHRAGM
Fitted by trained personnel
Does not confer the same degree of protection against STDs
Prior to intercourse to occlude the vagina prior to intercourse
Spermicide should be used
for maximum protection
Latex allergy,recurrent vaginal and UTI
per HWY 4-20

Barrier method

- Cap: silicone rubber
- Easier to fit and Less likely to slip
- Reduced risk of UTI(less pressure to the surrounding vaginal wall)
- Rarely used: difficult to insert and remove.
- Advantage: Protects against STIs Encouraged for high risk groups.

Emergency contraception

- Back –up method
- After unprotected intercourse and before implantation.
- After failure of barrier method, missed pills.
- Any drug or device used after intercourse to prevent pregnancy
- **Three options**:

1.Pill containing a progesterone receptor modulator(ulipristal acetate) 30 mg, single dose within 5 days of intercourse.
2.Progesterone: levonorgestrel 1.5 mg(LNG-EC), taken as a single dose w 72 hrs of intercourse.
3.IUD: 5 days after the estimated day of ovulation.

- **Mechanism of action EC**:

*LNG-EC
Inhibit and delay ovulation if taken several days before ovulation.
Immediately before ovulation not ineffective.

*UPA-EC
effective
Interfere with implantation : endometrial effect.

- **Efficacy of EC**:

One RCT comparing LNG and UPA
showed lower pregnancy rate in UPA
LNG prevent 69%
UPA prevent 85 %

- **Cupper IUCD:**

-The most effective method.
-Up to 5 days of the earliest predicted ovulation.
-Within 5 days of unprotected intercourse.
-Spemicidal and blastocidal action of cupper.

Sterilization

- Permanent, irreversible contraception.
- Usually chosen by older couples ,completed family.
- Male or female.
- Can be reversed, subsequent pregnancy rate 5%.
- 10-15 % regret the decision(age less than 30 years, no children, within a year of delivery).
- During concelling we should discuss the long –acting reversible methods.

Female sterilization

1. Female sterilization: blocking both fallopian tubes.
2. Not alter the menstrual pattern.
3. Coc→heavier.
4. IUCD → lighter.
5. laparoscopy, hysteroscopy or minilaparotomy.
6. Proper counselling(irreversible, failure rate 1 in 200, ectopic pregnancy).

Filshie clips

1. Filshie clips : commonest.
2. Right angel to the tube.
3. 1-2 cm from cornua.
4. Whole width.
5. Multiple clips is not necessary.

Pomeroy technique
loop of tube tied and
Excised
Laparotomy

- **Complications:**

1. Anaesthesia problems.
2. Damage to intraabdominal organs.
3. Need for lapatomy: obese, adhesions**.**

Hysteroscopic sterilization

1. Intrafallopian implants.
2. Avoiding abdominal incision,local anaesthesia.
3. Candidates :high BMI,medical illness,previous abdominal and pelvic surgery).
4. Microinsert placed in the proximal section of the fallopian tube—induce inflamation—fibrosis and scar formation.
5. Additional method of contraception.
6. HSG at three months.
7. Essure: Insertion of expanding spring measuring 2 mm in diameter and 4 cm length(stainless steel and nickel-containing Dacron fibers.
1. Adiana : radiofrequency ablation in conjunction with a silicone micro-insert.
2. Adverse events: tubal perforation, infection, device migration, device expulsion and vasovagal attack and pelvic pain.
3. **Efficacy**:
   Filshie clip FR 2-3 per 1000 after 10 years
   Life time failure is 1 in 200
   Failure rate increased during caearean section or done immediate puerperium
   Lowest with minilaparotomy
4. **Timing**:

-Consent should be obtained one week prior to procedure.
-Any time during cycle.
-Pregnancy test day of the operation.
-Continue the same contraception till surgery.
-IUCD till next cycle.

Male sterilization
Vasectomy
Division or removal of a piece of each vas
Cheaper
out patient basis
local anaesthesia

vasectomy

1. Not effective immediately.
2. Contraception should be continued until there are two consecutive semen analysis of azospermia.
3. First test 8 weeks after the procedure, and the second after 2-4 weeks (20 ejaculations).
4. **Advantage**: the ability to check for efficacy (SFA).
5. **Failure rate** is 1 in 2000.
6. Vasectomy **complications**:

I. Scrotal bruising (everyone)
II. Haematoma (1-2 %)
III. Wound infection (up to 5%)
IV. Antisperm antibodies (leakage of sperm)
V. Chronic testicular pain(unknown cause)
VI. Granuloma formation(painful)
VII. Atherosclerosis , testicular cancer
VIII. FR (1 in 2000), natural reversal 1 in 4000.

7. **Reversal**:
   Success rate 52-82%.
   Time since vasectomy.
   Type of vasectomy.
   Techinque of reversal.
   Surgical expertise
8. **Consent:**
   Careful counselling.
   Written consent.
   It should clearly indicated that sterilization is A permanent procedure.

- **Counselling:**
    - 10 % of couples may regret being sterilized.
    - Young age group,immeditately after delivery or at time of induced abortion.
    - 1% request reversal.
    - Contents:

    1) Age
    2) Family size
    3) Problems of current contraception
    4) Partner
    5) Stability of the relationship
    6) FR
    7) The procedure Risks and side effect
    8) Reversibility

- **Reversal of sterilization:**
    1. Laparotomy, microsurgery, 70% success.
    2. 5% ectopic pregnancy
    3. Vasectomy.
    4. 90% success rate.
    5. Pregnancy rate 60 % ASA.

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