Contraception

People use different types of contraception at different stages in their lives & there is no one method that will suit everyone.

There is no perfect method of contraception & each method will have a balance of advantages & disadvantages.

The characteristics of ideal contraceptive method would be:

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 & religions
7. Easily distributed & administered by non-healthcare personnel.

Classification of contraception

1. Combined hormonal contraception

-the pill

-patches

-the vaginal ring

-injection

2. progestogen-only preparations

-progestogen only pills

-injectables

Subdermal implants

3. Hormonal emergency contraception

4. Intrauterine contraception

-cppper intrauterine device (IUD)

-Hormone releasing intrauterine system (IUS)

-inert plastic intrauterine device

5. Barrier methods

-condoms

-Female barriers

-natural family planning

6. Sterilization

-female sterilization

-vasectomy

Failure rate:

Are expressed as **the number of pregnancies if 100 women were to use the method for one year.**

Failure rates for some methods are largely caused by poor use(user failure) rather than an intrinsic failure of the method itself.method wich **prevent ovulation** are usually **highly effective** because there is no egg then fertilization simply can not occure.However,if ,for example,pills are forgetting ,then breakthrough ovulation can occure & failure rates are higher.Method which require **no regular need for the user to remember to do anything**,for example an intrauterine device or Implanon,are generally much **more effective** than methods which rely on the user to do something regularly.

The effectiveness of contraceptive methods:

Method of contraception	Failure rate per 100 women years
Combined oral contraceptive pills	0.1-1
Progestogen-only pills	1-3
Depo-provera	0.1-2
implanon	0.1
Copper IUD	1-2
mirena	0.5
Male condome	2-5
diaphragm	1-15
Natural family planning	2-3
vasectomy	0.02
Female sterilization	0.13

Contraindications

Contraception is generally extremely **safe**; some methods do have very rare but serious risks. It is important to establish any factors in the medical history that could contraindicate a particular method.

No method is contraindicated by age alone.

WHO criteria for contraceptive use:

category	Classification of condition	Use of the method in practice
1	No restriction for the use of the method	Use in any circumstance
2	The advantages of using the method generally outweigh the theoretical or proven risk	Generally use
3	the theoretical or proven risks usually outweigh the advantages of using the methd,requires careful clinical judgment & access to clinical services	Not usually recommended unless other more appropriate methods are not available or not acceptable
4	Represent an unacceptable health risk if the	Do not use

Non contraceptive health benefits:

Condoms: prevent sexually transmitted infections, protect against cervical cancer

Diaphragms also protect against cervical cancer

Mirena:help heavy or painful periods

Combined oral contraceptive pills:

Increased bone density
Reduced menstrual blood loss and anemia
Decreased risk of ectopic pregnancy
Improved dysmenorrhea from endometriosis
Fewer premenstrual complaints
Decreased risk of endometrial and ovarian cancer
Reduction in various benign breast diseases
Inhibition of hirsutism progression
Improvement of acne
Prevention of atherogenesis
Decreased incidence and severity of acute salpingitis & PID
Decreased activity of rheumatoid arthritis

Combined hormonal contraception:

Combined oral contraceptive pills:

The pill contains a combination of two hormones:a synthetic **oestrogen & a progestogen**(a synthetic derivative of progesterone)

It is easy to use & offers a very high degree of protection against pregnancy,mainly used by young,healthy women who wish a method of contraception that is **independent of intercourse**.For maximum effectiveness,COC should always be taken regularly at roughly the same time each day.

The pill offers no protection from STD's

Mode of action:

COC acts both centrally & peripherally.

1. Inhibition of ovulation:

Both oestrogen & progestogen suppress the release of pituitary follicle-stimulating hormone (FSH) & lutenizing hormone (LH), which prevents follicular development within the ovary & therefore ovulation.

2. Peripheral effects include making the endometrium atrophic & hostile to implantation & altering cervical mucus to prevent sperm ascending into the uterine cavity.

Formulation:

Oestrogen:

-Ethinyl estradiol (EE) in a daily dose of between **15 -35 µg.**
Those containing lower dosage are associated with slightly poorer cycle control. Those containing higher daily dosages ex: 50 µg EE are prescribed in special situations.
Higher dosage of oestrogen(above 50µgEE) are strongly linked to increased risks of both arterial & venous thrombosis.

-Anew combined preparation contains the natural oestrogen,estradiol valerate,in place of synthetic EE.

Progestogens:

-Second generation pills: contain derivatives of norethindrone & levonorgestrel.

-Third generation pills: include desogestrel,gestodene & norgestimate.

-pills containing the newer progestogens:drospirenone & dienogest

-combined preparation contains the potent anti-androgen cyproterone acetate (Dianette),

Contraindications:

Most of these relate to the side effects of sex steroid hormones on the **cardiovascular & hepatic systems**.

Women should ideally discontinue COC at least two months before any elective **pelvic or leg surgery** because of the risk of venous thromboembolism.

Absolute contraindications for use of theCOC:

1. Breast feeding less than 6 weeks postpartum.
2. Smoking 15 cigarettes/day & age 35 or above.
3. Multiple risk factors for cardiovascular disease.
4. Hypertension: systolic pressure 160 or diastolic 100 mmHg
5. Hypertension with vascular disease.
6. Current or history of deep-vein thrombosis/pulmonary embolism.
7. Major surgery with prolonged immobilization.
8. Known thrombogenic mutations.
9. Current or history of ischaemic heart dis.

10. Current or history of stroke.
11. complicated valvular heart disease.
12. Migraine with aura.
13. Migraine without aura & age 35
14. Current breast cancer.
15. Diabetes for 20 years or with severe vascular disease or with severe nephropathy,retinopathy or neuropathy,
16. Active viral hepatitis.
17. Severe cirrhosis.
18. Benign or malignant liver tumors.

Relative contraindications for use of the COC:

1. Multiple risk factors for arterial disease.
2. Hypertension: systolic blood pressure 140-159 or diastolic pressure 90-99 mmHg,or adequately treated to below 140/90 mmHg.
3. Some known hyperlipidaemias
4. Diabetes mellitus with vascular disease.
5. Smoking less than 15 cigarettes/day and age less than 35 years.
6. Breast cancer with >5 years without recurrence.
7. Obesity.

8. Migraine, even without aura, & age less than 35 years.
9. Breast feeding until six months postpartum.
10. Postpartum & not breastfeeding until 21 days sfter childbirth.
11. Current or medically treated gallbladder disease.
12. History of cholestasis related to combined oral contraceptives.
13. Mild cirrhosis.
14. Taking rifampicin or certain anticonvulsants.

Side effects & risks:

The most important risks relate to cardiovascular disease.

-**venous thromboembolism:**

COC increases risk of VTE three to five- folds. **Oestrogen** (in COC, pregnancy & with hormone replacement therapy) **alters blood clotting & coagulation in a way that induces a pro-thrombotic tendency.** The effect appears independent of dose of EE dose below 50µg but is significantly increased with higher dosages above this.

The type of progestogen also affects the risk of VTE, with users of COC containing **third-generation progestogens** being twice as likely to sustain a VTE as those using older second generation preparations. The absolute risk of an event with COC is very small but increased in the presence of an **inherited thrombophilia**.Women with a significant family history of VTE should be carefully assessed & tested for inherited thrombophilias prior to being prescribed COC.

The risk of VTE is:

*5/100000 for normal population.

*15/100000 for users of second-generation COC.

*30/100000 for users of third-generation COC.

*60/100000 for pregnant women.

Arterial disease:

Is much less common than VTE but more serious. The risk of **myocardial infarction & thrombotic stroke** in young, healthy women using low-dose COC is extremely small.

Cigarette smoking & high blood pressure will both increase the risk,& any women who smokes must be advised to stop COC at the age of 35 years. Around 1% of women taking COC will become significantly hypertensive & they should be advised to stop taking it.

Breast cancer:

There is a slight increase in the risk of developing breast cancer among current COC users. This is not of great significance to young women, as the background rate of breast cancer is very low at their age.

For women in her **forties** or one with a strong **family history**, the rate of breast cancer is higher.

Effect of COC on breast cancer **risk disappears ten years after stopping COC.**

Drug interactions:

This can occure with **enzyme –inducing agents** (anti-epileptic drugs).Higher dose estrogen pill combinations of 50 µg EE may need to be prescribed.

Some broad spectrum antibiotics can alter intestinal absorption of COC & reduce its efficacy. **Additional contraceptive measures** should therefore be recommended during antibiotic therapy & 1 week thereafter.

Other common side effects of COC:

1. Central nervous system:

-depressed mood.
-mood swings.
-headaches.
-loss of libido.

2.gastrointestinal:

-nausea.
-perceived weight gain.
-bloatedness.

3.reproductive system:

-breakthrough bleeding.
-increased vaginal discharge.

4.breasts:

-breast pain.

-enlarged breasts.

5.miscellaneous:

-chloasma(facial pigmentation which worsens with time on COC)

-fluid retension.

-change in contact lens.

The Contraceptive consultation & patient management:

The user needs to make an informed choice about which method to use. The discussion about a method needs to cover:

-mode of action effectiveness

-side effects or risks

-benefits

-how to use the method.

Before COC is prescribed, a detailed past medical & family history should be taken & blood pressure checked.Routein weighing, breast & pelvic examinations are not required.

Most women are given a 3-months supply of COC.in the first instance, & have 6-12 monthly reviews thereafter.

Women need clear advice about what to do if they miss any pills.

Management of missed pills:

If one or two 30-35µg ethinylestradiol pills have been missed at any time or one 20 µg ethinylestradiol pill is missed:

-she should take the most recent missed pill as soon as she remembers.

-she should continue taking the remaining pills daily at her usual time

-she does not require additional contraceptive protection.

-she does not require emergency contraception.

If three or more 30 -35µg ethinylestradiol pills have been missed at any time or two or more 20µg ethinylestadiol pills are missed:

-she should take the most recent missed pill as soon as she remembers.

-she should continue taking the remaining pills daily at her usual time

-she should be advised to use condoms or abstain from sex until she has taken pills for 7 days in a row.

-in addition:

A-if pills are missed in week 1(days 1-7): emergency contraception should be considerd if she had unprotected sex in the pill-free interval or in week 1.

B- If pills are missed in week 3(days 15-21):she should finish the pills in her current pack and start a new in the next day; thus omitting the pill-free interval.

Combined hormonal vaginal rings: NuvaRing

It is made of latex-free plastic & has a diameter of 54mm.it releases a daily dose of ethinyl estradiol 15µg & etonorgestrel 120µg.the ring is worn for 21 days & removed for 7 days, during which time a withdrawal bleed occurs.

Insertion & removal of the ring is easy & it does not need to fit in any special place in the vagina.

The cycle control is excellent & probably better than with COC.

As with combined patches, the vaginal ring has the same risks & benefits as COC but is more expensive.


Birth Control Methods
Patch
Cervical Cap
Injectable
Vaginal Ring
Male Condom
Pills
Diaphragm
Female Condom
Spermicides
IUD
IUS
NPWH
ORTHO WOMEN'S HEALTH
AMWA

Ortho Evra (The Patch)

Transdermal contraceptive patch that contains estrogen and progesterone.The patch is thin, flexible , two inch square that is worn on the body.The increased hormone level caused by the patch stops the ovaries from releasing an egg each month .

99% effective.Apply patch on the same day for three weeks,During week four ,period will begin.

Progestogen-only contraception:

Progestogen-only contraception avoids the risks & side effects of oastrogen.

The current methods of progestogen-only contraception are:

1. progestogen-only pill, or mini-pill
2. Subdermal implant (Implanon)
3. Injectables (Depo-provera,Noristeral)
4. hormone-releasing intrauterine system (Mirena)

All progestogen-only methods work by a local effect on cervical mucus (making it hostile to ascending sperm) and on the endometrium(making it thin and atrophic),thereby preventing implantation & sperm transport.The higher dose progestogen-only methods will also act centrally & inhibit ovulation, making them highly effective.

As they do not contain oestrogen,progestogen-only methods are extremely safe & can be used if a women has cardiovascular risk factors,for example older women who smoke.

The common side effects of progestogen-only methods

include:

1. Erratic or absent menstrual bleeding.
2. Simple, functional ovarian cyst.
3. Breast tenderness.
4. Acne.

Progestogen-only pills (POP):

It is taken **every day** without a break,it is ideal for women at times of lower fertility because the failure rate of POP is greater than that of COC & if the POP fails ,there is a slightly higher risk of ectopic pregnancy.

The dose of desogestrel in the POP Cerazette inhibits ovulation in almost every cycle of use making it highly effective & the pill of choice for young women who cannot take the combined pill.

Particular indications for the POP include:

1. Breast feeding.
2. Older age.
3. Cardiovasvular risk factors,ex;high blood pressure, smoking or diabetes.

Injectable progestogens:

A.depot medroxyprogesterone acetate 150 mg (Depo-Provera/DMPA):

Each injection **last for 12 weeks**, it is highly effective & given by deep intramuscular injection.

Most women who use it develop very light or absent menstruation. Depo-Provera will improve premenstrual syndrome & can be used to treat menstrual problems such as painful or heavy periods. It is very useful for women who have difficulty remembering to take a pill regularly.

Depo-Provera causes **low estrogen levels & this is associated with loss of bone mineral density & osteoporosis** especially when used for long term.

Particular side effects of Depo-Provera include:

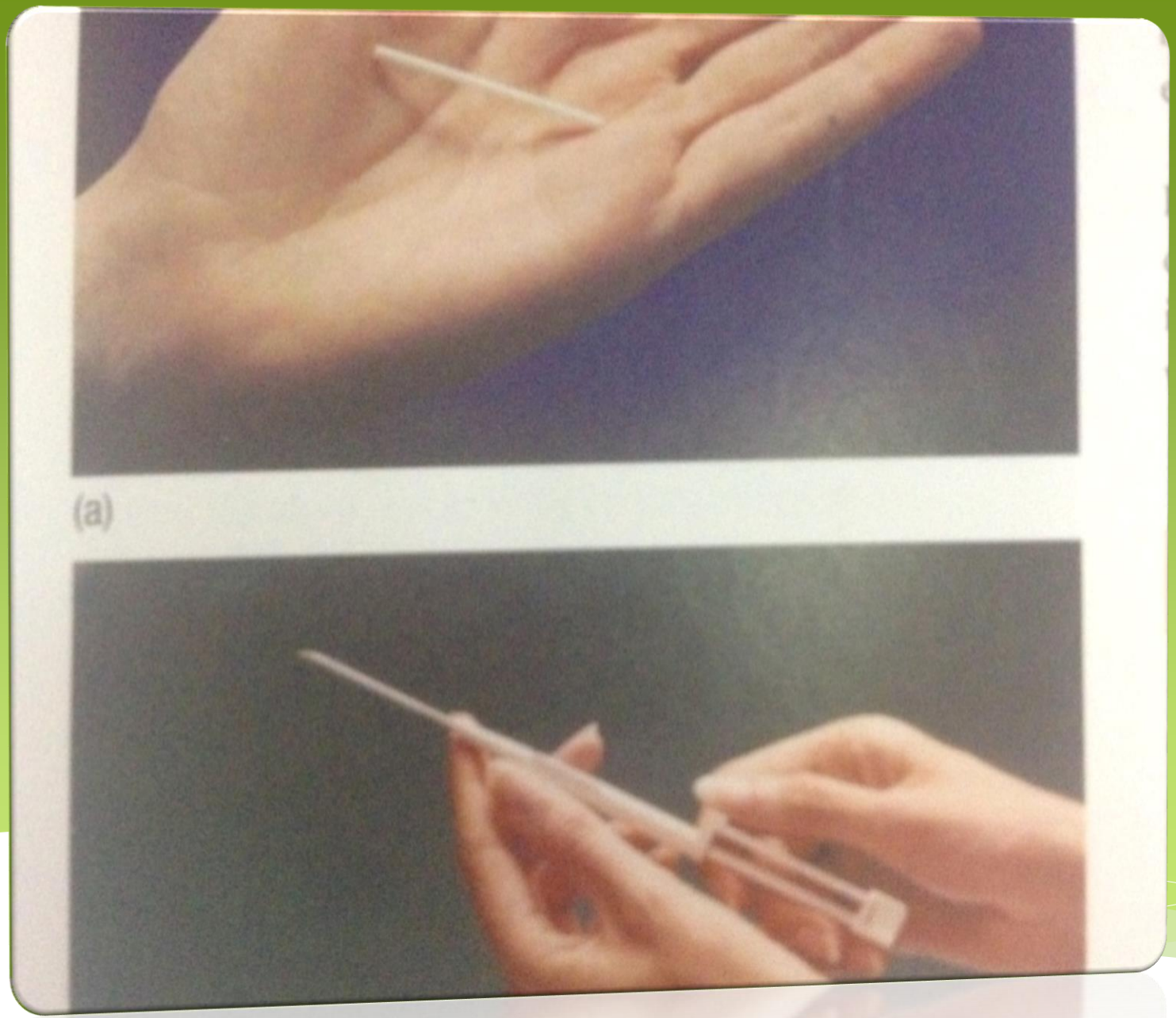
1. Weight gain (2-3) kg in the first year of use.
2. Delay in return of fertility-it may take around six months longer to conceive compared to a women who stops COC.
3. Persistently irregular periods, most women become amenorrhea.

B.norethisterone enthanate 200mg (Noristerat):

Only last for 8 weeks & is not nearly so widely used.

Subdermal implants:

Implanon consist of a single silastic rod that is inserted subdermally under local anaesthetic in to the upper arm. It releases progestogen etonogestrel 25-70 Mg daily (the dose released decreases with time),which is metabolized to the third generation progestogen desogesyrel.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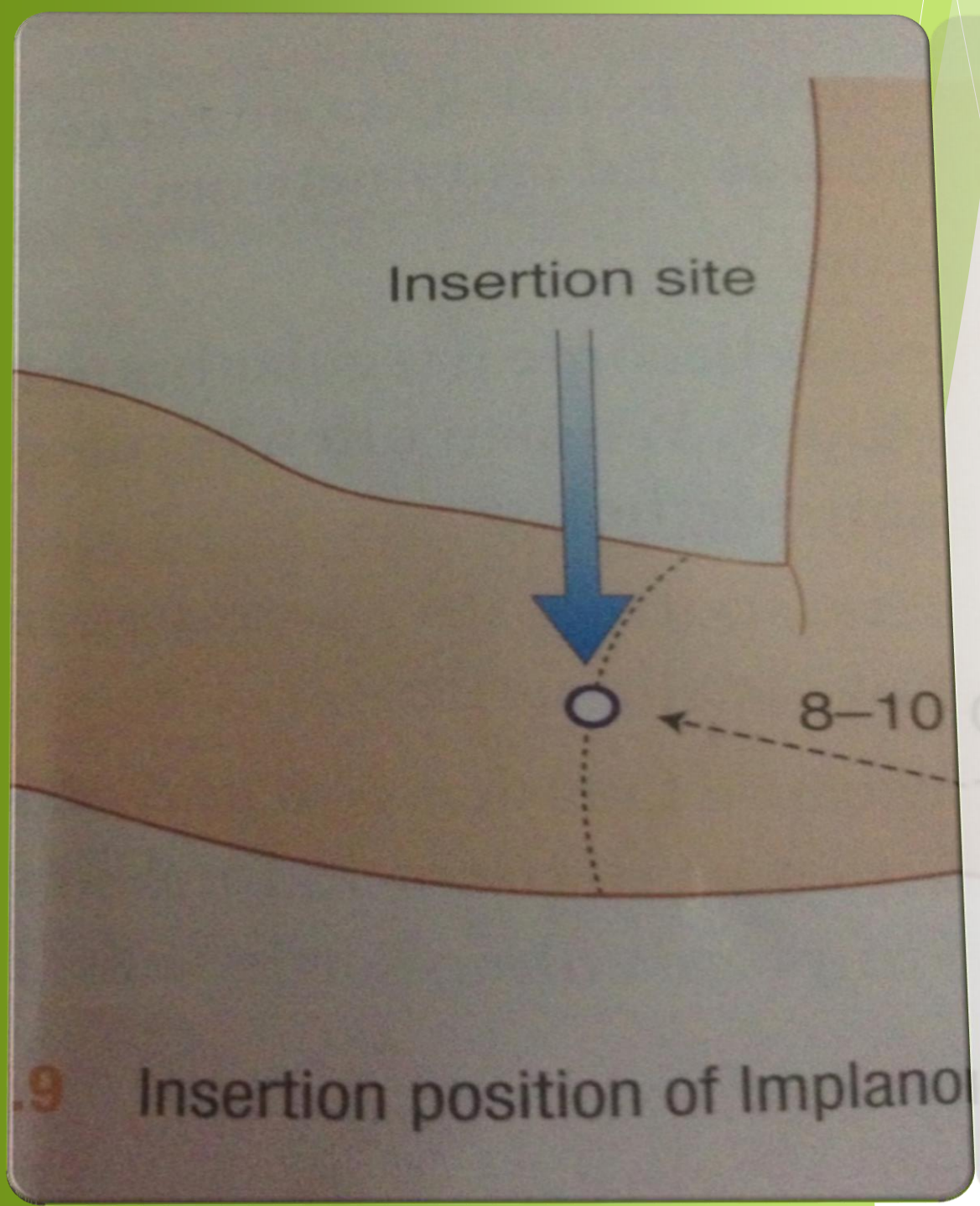


.9 Insertion position of Implano

It lasts for 3 years & thereafter can be easily removed & further implant inserted if requested.

There is a rapid return of fertility when it is removed, but irregular bleeding is very common & is the major reason for early discontinuation also, healthcare professionals need special training for Implanon insertion & removal.

Intrauterine contraception:

It is ideal for women who want a medium-to long-term method of contraception independent of intercourse & were regular compliance is not required.

Types:

1. Plastic inert devices which often caused significantly heavier and more painful menstrual periods These are no longer available,
although some women may still have them in situ.Once fitted, they could be left until the menopause.

2.Copper-bearing device:are available in various shapes and size,
it has toxic effect on both sperm & egg,i.e.acting prior fertilization.
induce an inflammatory response in the endometrium which prevents implantation.

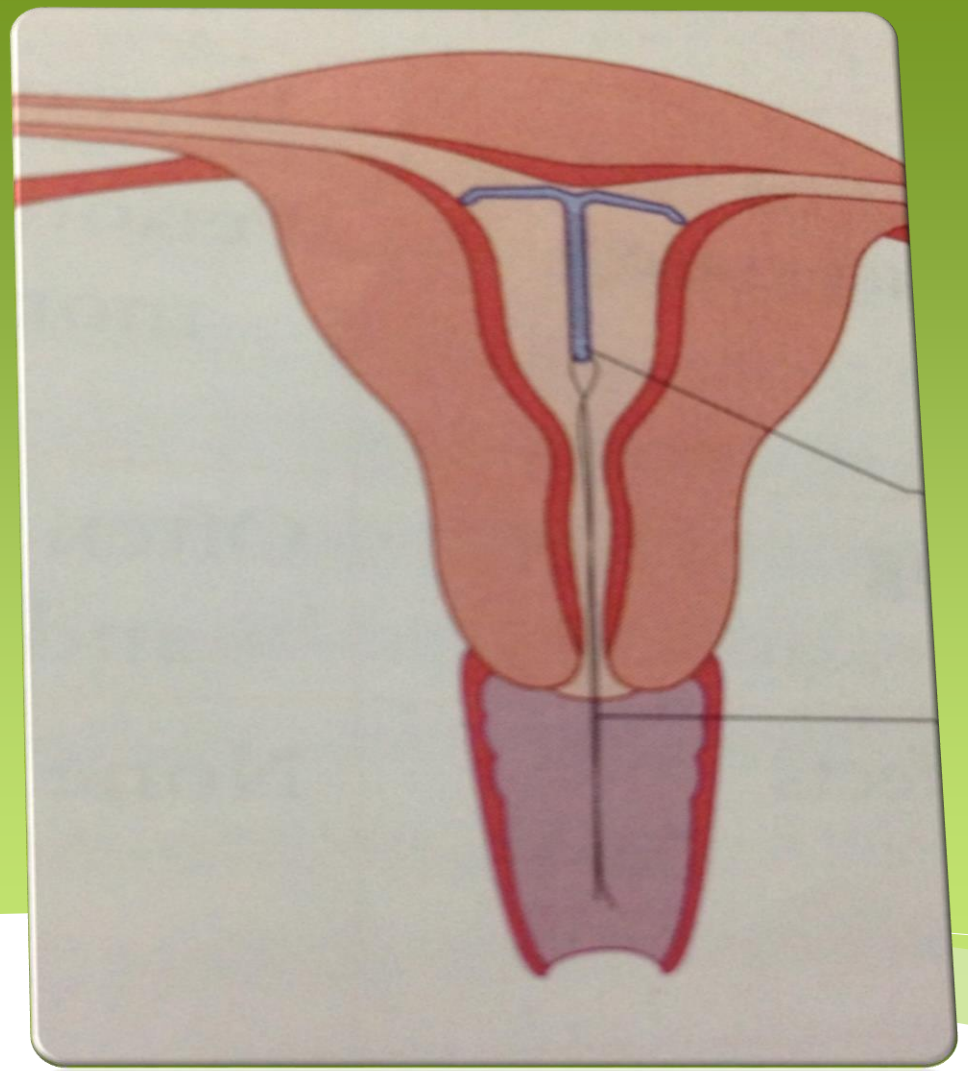
Contraindications

- Current STD or PID
- **Previous ectopic pregnancy.**
- Known malformation of the uterus or distortion of the cavity (fibroid)
- **Copper allergy (but could use an IUS).**

Malignant trophoblastic disease

Unexplained vaginal bleeding

Endometrial & cervical cancer (until assessed & treated)



Side effects of copper-bearing IUDs

- Increased menstrual blood loss,
- **Increased dysmenorrhoea.**
- Increased risk of pelvic infection in the first few weeks following insertion.

-prevent all types of pregnancy including ectopic pregnancy,but if a pregnancy occurs in a user,yhe risk of it being ectopic is 3-5%

-risk of perforation mainly occurs at time of insertion

3. Hormone releaseing intrauterine system (Mirena):

It has a capsule containing **levonorgestrel** around its stem which releases a daily dose of 20µg of hormone.

The IUS prevents pregnancy primarily by a **local hormonal effect on the cervical mucus and endometrium.**

Levonorgestrel-releasing intrauterine system

Advantages

Highly effective

Dramatic reduction in menstrual blood loss ,helps heavy & painful periods

Can be used as a part of hormone replacement therapy regimen

Protection against pelvic inflammatory disease

Disadvantages

Persistent spotting and irregular bleeding in first few months of use

Progestogenic side effects, e.g. acne, breast tenderness, mood swing

Expensive.

*fitting of an IUCD is by trained healthcare (risk of perforation mainly at time of insertion).A fine thread is left protruding from the cervix in to the vagina & the IUD can be removed by traction on this thread.

Barrier method of contraception:

Condoms:

Male condoms are made of latex rubber

Cheap

Prevent the spared of STD, HIV

Men must apply condoms before genital contact

Spermicides:

Either:gel,cream ,pessaries,foam.

They all contain the active ingredient nonoxynol-9 .

Spermicides are designed to be used **with another barrier** method to make them more effective.

Female barrier:

Female **diaphragm** should all be used with spermicidal cream or gel.

Diaphragms are **inserted immediately prior to intercourse** & should be **removed not earlier than 6 hours later.**

Female barriers offer protection against pelvic infection,but can increase the risk of urinary tract infection and vaginal irritation.

Withdrawal-coitus interruptus :

This method does not require any medical advice.The penis is removed from the vagina immediately before ejaculation takes place.

It is not particularly reliable as pre-ejaculatory secretions may contain million of sperm & young men often find it hard to judge the timing of withdrawl.

Natural family planning:it include the abstaining from intercourse during the fertile period of the month.
The fertile period is calculated by various techniques,such as:
1.changes in basal body temperature.
2.changes in cervical mucus.
3.tracking cycle days
4.combined approaches.
5.commertially kits –for reading urinary hormone levels.to define fertile period.

Failure rate are quite high because of poor compliance.

Lactetional amenorrhea used by fully breastfeeding mothers.During the first six months of infant life,full breast feeding gives more than 98% contraceptive protection.

Emergency contraception:-EC

It is back-up method that is used after intercourse has taken place & before implantation has occurred.

EC should be considered if

1. Unprotected intercourse has occurred
2. Failure of barrier method,ex burst condom
3. If hormonal contraception has been forgotten.

Types of EC :

1-Hormonal emergency contraceoption:

A/Levonorgestrel single dose 1.5 mg.It has to be used within 72 hours of an episode of unprotected intercourse has occurred & the earlier it is taken the more effective it is.

It will prevent around three-quarters of pregnancies.It involves disruption of ovulation or corpus luteal function depending on the time in the cycle when hormonal EC is taken.

B/progesterone receptor modulator , following unprotected sex.(ulipristal 30 mg).

2-IUD for emergency contraception:

A cupper IUD can be inserted up to five days after the calculated earliest day of ovulation covering multiple episodes of intercourse in the same menstrual cycle or up to five days after a single episode of unprotected intercourse at any stage in the cycle.

The IUD prevents implantation & the copper ions exert an embryo-toxic effect.

The mirena is not effective for EC

Sterilization:

Permanent methods of contraception

1-female sterilization: mechanical blockage of both fallopian tubes to prevent sperm reaching & fertilizing the oocyte.It can also be achieved by hysterectomy or total removal of the fallopian tubes.

It is performed by laparoscopy or mini laparotomy under G.A.

Technique:clips,fallope ring,ligation,electrocutery/diathermy,Essure,chemical agents ex,quinacrine.

Complication:

-anaesthetic problems.

-damage intra-abdominal organs

-some women presented with abnormal uterine bleeding.

2-vasectomy:easier,cheaper,more effective than female sterilization,does not require general anaesthetic

It involves the division of the vas deferens on each side to prevent the release of sperm during ejaculation.

If two consecutive semen samples taken at 12 & 16 weeks are free of sperm ,the vasectomy can be considered complete.an alternative form of contraception must be used until that time.

Thank you