CONTRACEPTION GUIDE

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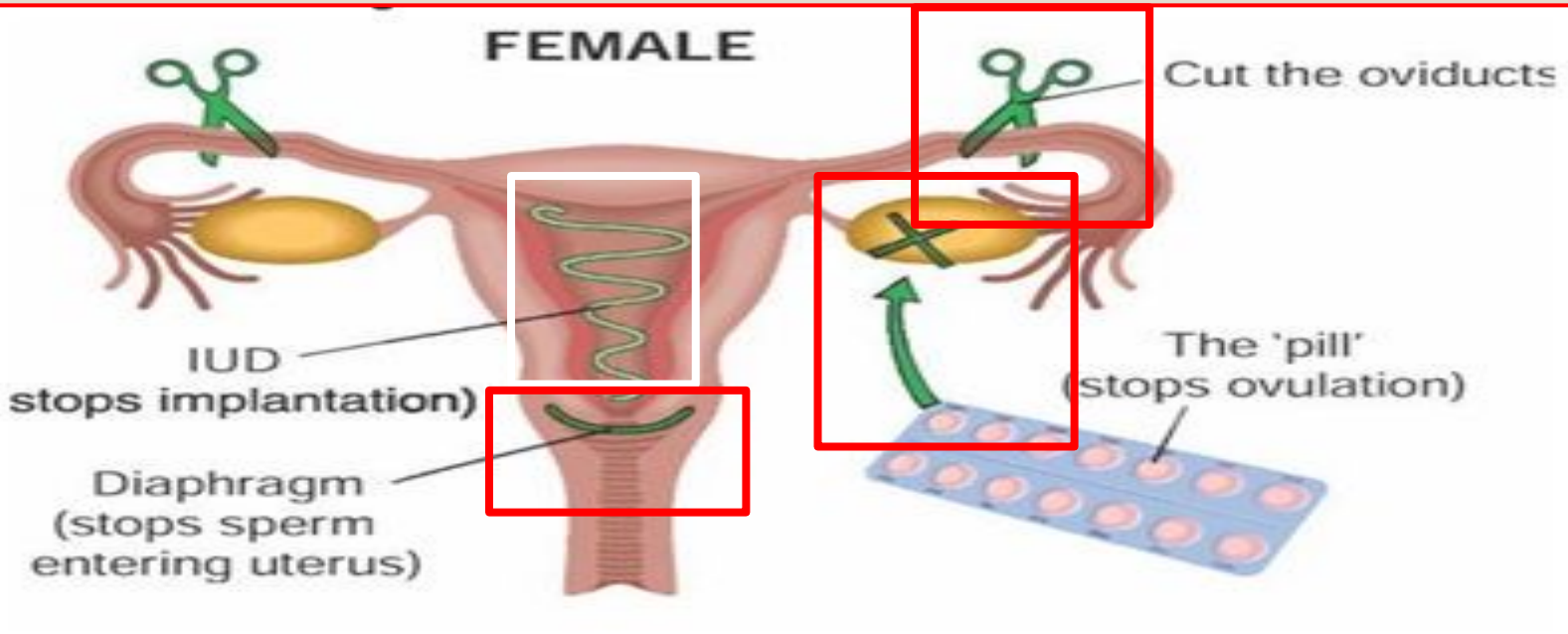
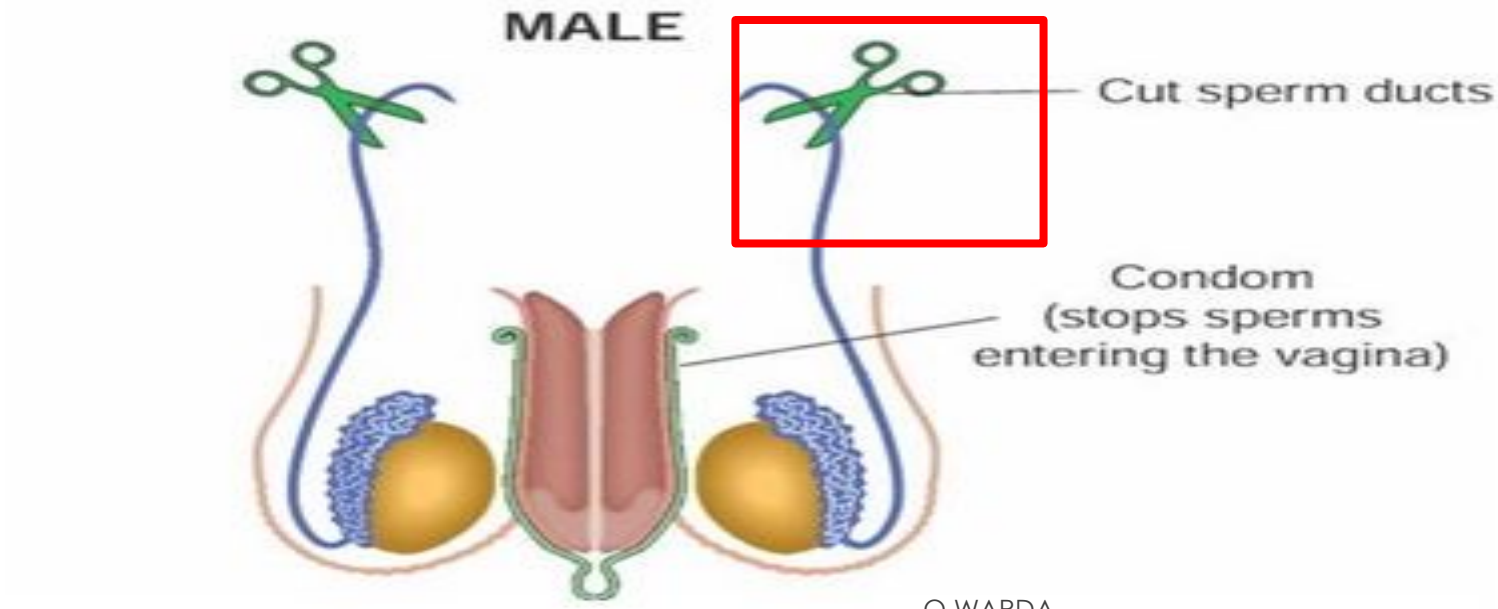
DEFINITION

- Prevention of conception by any method other than abstinence.

HOW THEY ACT?


FEMALE
Cut the oviducts
IUD
stops implantation)
The 'pill'
(stops ovulation)
Diaphragm
(stops sperm
entering uterus)


MALE
Cut sperm ducts
Condom
(stops sperms
entering the vagina)

What are the objectives?

A) Prevention of overpopulation which causes ↓↓ in SES.

B) Offering proper pregnancy spacing for sake of mother & baby.

C) Prevention of pregnancy in unsuitable maternal age.

D) Prevention of pregnancy in cases è temporary or permanent contraindications to pregnancy.

E) Prevention of pregnancy in cases è transmittable genetic disorders.

F) Enjoying marital life.

Criteria of ideal contraceptive method:

No ideal method.

1) Accepted by couple
2) Available.
3) Cheap.
4) Easy to use.
5) Effective.
6) Reliable.
7) Reversible & doesn't affect return of fertility.
8) Safe & free of side effects or complications.
9) Doesn't need medical supervision.
10) Doesn't affect sexual relationship.

What are types of contraceptives?

A) Conventional methods:

1) Physiological:

a) Lactation amenorrhea (LAM).

b) Safe period (periodic abstinence).

c) Coital technique modifications: Coitus interruptus & coitus reservatus (also known as sexual continence).

2) Mechanical (barrier methods):

a) Male: Condom.

b) Female: Condom, vaginal diaphragm & cervical cap.

3) Chemical: Spermicides.

What are types of contraceptives?

B) Hormonal methods:

1) **Oral contraceptives (OCs):**
   a) Combined oral contraceptives (COCs).
   b) Progesterone only pills (POPs or minipills).
2) **Injectable contraceptives:**
   a) Progesterone only injectable contraceptives (PICs).
   b) Combined injectable contraceptives (CICs).
3) **Subdermal contraceptive implants.**
4) **Vaginal ring.**
5) **Progesterone medicated IUCDs.**

C) Intrauterine contraceptive device (IUCD).

D) Voluntary surgical contraception.

Contraceptive efficacy

- Failure of contraceptive method may be:
  - **1) Method failure:** Failure rate when method is used ideally.
  - **2) Use failure:** Failure rate è incorrect use of method.
- Failure rate may be calculated by:
  - **1) Pearl index:** Number of unintended pregnancies / 100 women using contraceptive method / year (HWY).
  - **2) Life table analysis:** Calculates failure rate / each month of use (more accurate).

WHO MEDICAL ELIGIBILITY CRITERIA

MEC categories for contraceptive eligibility	
1	A condition for which there is no restriction for the use of the contraceptive method
2	A condition where the advantages of using the method generally outweigh the theoretical or proven risks
3	A condition where the theoretical or proven risks usually outweigh the advantages of using the method
4	A condition which represents an unacceptable health risk if the contraceptive method is used.

MEC WHEEL

HOW TO APPLY THE MEC WHEEL (MEDICAL ELEGIBILITY CRITERIA WHEEL) PRACTICALLY IS SHOW IN THIS VIDEO ; VIA THE LINK

https://drive.google.com/file/d/16EYN7o-NJWepDg-Zz_3f2NT1m2-Bz7js/view?usp=sharing

Lactation amenorrhea (LAM)

ACTION

A) High prolactin levels suppress LH secretion → prevention of ovulation.

B) Nipple stimulation during suckling → neural impulses to inhibit pulsatile GnRH secretion.

HOW /WHEN TO USE?

A) Within 6 months postpartum.

B) Fully or at nearly fully breastfeeding (at least 85 % of baby feeding is breastfeeding).

C) Amenorrheic.

Lactation amenorrhea (LAM)

Advantages:

A) Universally available to all breastfeeding women.

B) No supplies are required.

C) At least 98% effective.

D) Protection begins immediately postpartum.

E) Can be used temporarily till breastfeeding woman decides method of contraception.

F) There are proven health benefits of breastfeeding for mother & baby.

Disadvantages:

A) Full or nearly full breastfeeding may be difficult to maintain for social circumstances.

B) Temporary method of limited duration that can be used only by breastfeeding women.

C) No protection from STDs including HIV.

Safe period (periodic abstinence)

Definition: Allowing intercourse in safe period (infertile period of cycle) & prevention of intercourse in fertile period around date of ovulation.

How to identify fertile period?

A) Calendar or rhythm method.

B) BBT chart method:

C) Cervical mucus method:

D) Sympto-thermal method: (typically temperature & cervical mucus changes & may include other signs of ovulation, as breast tenderness or back pain).

Safe period (periodic abstinence)

Advantages:

A) Available.

B) Safe & free of side effects or complications.

C) User controlled.

Disadvantages:

A) Relatively high failure rate.

B) Requires skills & motivation.

C) Requires partner cooperation (not accepted by many couples).

D) Signs of fertility may not be reliable.

E) No protection from STDs including HIV.

Barrier methods; Male Condom

- ***Action by*** Mechanical blocking of passage of sperms.
- **Efficacy:** Use failure is 14/HWY.

Advantages:

A) Contraceptive benefits:

1) Available. 2) Cheap. 3) Reversible 4) Safe.

5) Easy to initiate & discontinue.

6) No medical supervision.

B) Non contraceptive benefits:

1) Protection against STDs including HIV.

2) Used in treatment of premature ejaculation & immunological infertility.

Disadvantages:

A) High failure rate: Due to maluse

B) Requires male partner cooperation.

C) Interruption of intercourse (used on erect penis).

D) Sexual unsatisfaction of both couples.

E) Can be damaged by exposure to oil-based lubricants, heat, humidity or light.

Barrier methods; Female Condom

Advantages: As male condom +

1) Used before intercourse (no interruption of intercourse).

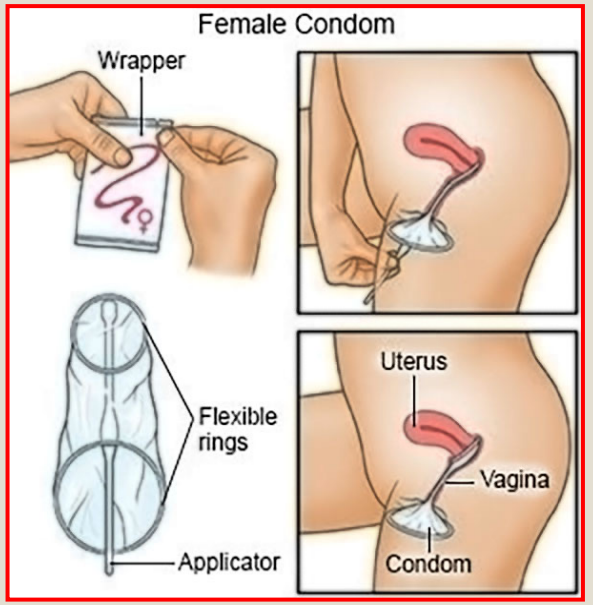
2) Used by female when male refuses use of condom.

3) Stronger than male condom.

Disadvantages:

1) Noisy

2) Sexual pleasure decreased



Vaginal diaphragm

Description: Rounded rubber diaphragm (dome shaped) with thick ring containing metal spring.

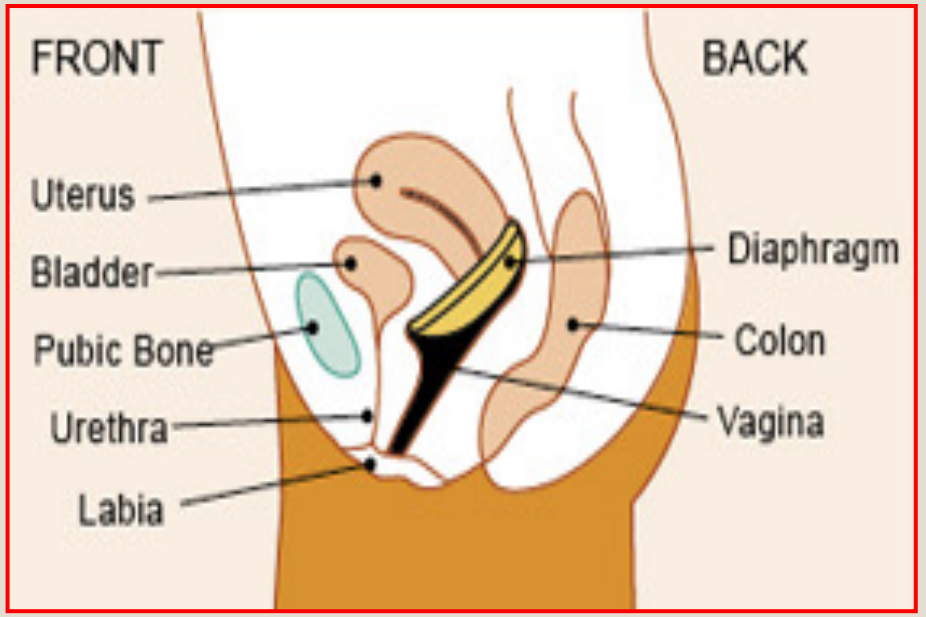
How to use? → Inserted by female before intercourse & removed 6 hours after.

Disadvantages:

A) High failure rate.

B) Used for each intercourse.

C) UTI.



Cervical cap

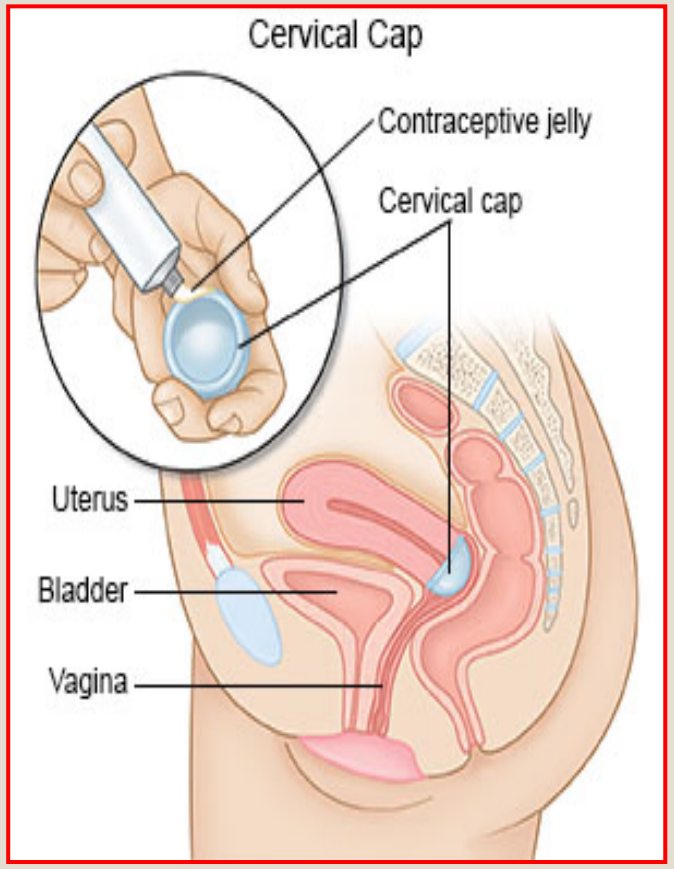
Description: Small rubber cap applied directly to cervix & retained by suction.

How to use? Inserted by doctor in last day of menstruation & removed just before next menstruation.

Disadvantages:

A) High failure rate.

B) Needs health personnel in insertion & removal.



Spermicides

Description: 2 parts:

A) Active agent: Spermicidal material (usually nonoxynol-9).

B) Base: Responsible for the form of spermicide (tablets, cream, foam or spray).

Mechanism of action: Active agent is spermicidal or spermistatic by:

1) Osmotic imbalance.
2) Inactivation of enzymes essential for sperm motility & fertilization.
3) Interference with O_2 uptake. 4) Fructoslysis.

How to use?

They are put in vagina few minutes before intercourse then allow intercourse.

No vaginal douching for 4 hours after intercourse to allow spermicides to work.

Advantages:

A) Has bactericidal effect inside vagina.

B) Has lubricant effect.

Disadvantages:

A) Highest failure rate.

B) Usually used as adjuvant method è condom or vaginal diaphragm.

C) Chemical vaginitis & ulceration.

Hormonal methods
Combined oral contraceptives (COCs)

Efficacy: Use failure is 1/HWY (commonest cause of failure is incorrect use).

	Ethinyl estradiol (EE)	**Gestagen** (all are C_{19} derivatives)
1st generation	50 µg	1st generation (Norethisterone "NET" family)
2nd generation	30-35 µg	2nd generation (Levonorgestril "LNG")
3rd generation	30-35 µg	3rd generation (Gestodene, Norgestimate, Desogestril)
4th generation	30 µg	4th generation (Drospirenone)

Types & composition:

A) Monophasic pills: Same dose of EE & gestagen for 21 days.		
	EE dose	**Use**
High dose pills (HDP)	> 50 µg	Only used as emergency contraception
Moderate dose pills (MDP)	50 µg	Not used now
Low dose pills (LDP)	30-35 µg	Used now

B) Biphasic pills: Not used now.		
	First 10 tablets	**Remaining 11 tablets**
EE	30 µg	30 µg
NET	0.5 mg	1 mg

C) Triphasic pills: Not used now.			
	First 6 tablets	**Next 5 tablets**	**Remaining 10 tablets**
EE	30 µg	40 µg	30 µg
LNG	50 µg	75 µg	125 µg

Mechanism of action:

A) Central action (1ry mechanism): Inhibition of ovulation.

1) **Estrogen:** Inhibition of FSH release (–ve feedback).
2) **Progesterone:** Inhibition of LH release (–ve feedback).

B) Peripheral action (2ry mechanism): Due to progesterone.

1) Thick cervical mucus not suitable for sperm penetration.
2) Atrophic endometrium not suitable for implantation.
3) ↓↓ motility of tubes (less effect as estrogen is antagonistic).

How to take?

Initiation:

1) **During first 7 days of menstrual cycle** (preferably on 1st day of menses).
2) **At any time** provided that pregnancy is surely excluded.
3) **Postpartum:**

a) Non breastfeeding women: Delay until 3 weeks after birth (due to high postpartum risk of DVT).

b) Breastfeeding women: Delay until 6 months after birth or until breastfeeding is discontinued (estrogen component ↓↓ breast milk).

4) **Postabortion:** Start immediately or within first 7 days after abortion.

How to take?

Schedule: Whatever type of pill, take 1 pill every day till all pills in pack are finished (21 pills) then rest for 7 days (during which withdrawal bleeding "pseudo-menstruation" occurs) then start again.

Missed 1 pill	**Missed ≥ 2 pills**	
Action/situation	***If > 7 pills are left in pack (first 2 weeks)***	***If < 7 pills are left in pack (3rd week)***
➢ Take missed pill as soon as remembered. ➢ Keep taking remaining pills on schedule. ➢ No need for backup method.	➢ Take 1 pill immediately & the other on next day. ➢ Keep taking remaining pills on schedule. ➢ Backup method for 7 days.	➢ Take 1 pill immediately & the other on next day. ➢ Start another pack on next day. ➢ Backup method for 7 days.

Indications

Indications of combined estrogen & progesterone therapy both contraceptive and non contraceptive benefits.

A) Contraceptive use: In women aged 20-35 years UNLESS contraindicated.

B) Non contraceptive uses:

1) To postpone menstruation.
2) Spasmodic dysmenorrhea.
3) Premenstrual Tension Syndrome (PMS).
4) After lysis of intrauterine synechiae.
5) Withdrawal test in amenorrhea.
6) AUB-O.
7) Hirsutism.
8) Acne.
9) Endometriosis.
10) Functioning ovarian cyst (???).

Advantages; Benefits

A) Contraceptive benefits:

1. Accepted by couple.
2. Highly effective.
3. Available.
4. Reversible.
5. Cheap.
6. Safe for most women (serious complications are rare).
7. Easy to use.
8. Doesn't affect sexual relationship.

B) Non contraceptive benefits:

->> REDUCE The following :

1. Risk of endometrial & ovarian cancer.
2. Risk of benign breast diseases.
3. Risk of ectopic pregnancy.
4. Risk of PID.
5. Symptoms of dysmenorrhea, PMS & endometriosis.
6. Menstrual irregularities.
7. Risk of anemia.

Disadvantages

1. Requires regular daily intake & resupply.
2. Incorrect use & missed pills are common → reduce efficacy.
3. Delayed return of fertility (may reach 3 months after stopping pills).
4. No protection from STDs including HIV.
5. Side effects (see later for details).

Side effects (risks / complications)

A) Menstrual disturbances:

1) **Breakthrough bleeding: (** *Treated by* Short exogenous estrogen course).

2) **Spotting:** *(Treated by :* Pills with more gestagen content or potency).

3) **Amenorrhea:**

a) During pill use (no withdrawal bleeding): may be due to Pregnancy (exclude it) or insufficient endometrial stimulation. Treated by Stop pills (menses will regain within 2 months) or supply exogenous estrogen for 1 month.

b) Post-pill amenorrhea:

Etiology: Persistent inhibition of hypothalamic-pituitary-ovarian axis.

Treatment: Reassurance (menses is expected to return spontaneously within 1 year) or clomiphene citrate (to stimulate the axis if amenorrhea persists).

Side effects (risks / complications)

B) Metabolic effects: Related to **dose** & **androgenic** potency of gestagen.

1) **CHO:** Impaired glucose tolerance (↑↑ diabetes).
2) **Lipids:** ↓↓ HDL & ↑↑ LDL (promotes development of atherosclerosis).

C) Cardiovascular effects: Estrogen has **thrombogenic** effect & causes salt & water retention & progesterone promotes development of **atherosclerosis** (with HDP) & causes salt & water retention also so, COCs users are more liable to:

1) HTN. 2) IHD. 3) Thromboembolism. 4) Cerebral strokes.

D) Oncogenic effects: increased risk of:

1) Cancer breast (specially if used before 36 years).
2) Benign & malignant liver tumors.
3) Cancer cervix (may be due to other factors as freedom of sex & multiple sexual partners).

Side effects (risks / complications)

E) Other effects:

1) Nausea, vomiting, headache, dizziness, mood changes, weight gain & breast tenderness.

2) On lactation: Suppression of lactation (estrogenic effect).

3) On genital tract: Hormonal cervical erosions, ↑↑ vaginal discharge & ↑↑ risk of monilia vaginitis.

4) Anti-cosmetic effects: Alopecia, acne & skin pigmentation.

5) ↑↑ incidence of gall stones formation.

F) Drug interaction: Drugs that ↑↑ activity of hepatic microsomal enzymes (e.g. rifampin & antiepileptic drugs) lead to ↑↑ destruction of estrogen & progesterone → ↓↓ efficacy of COCs.

Contraindications

A) Absolute: **WHO medical eligibility criteria for starting COCs category 4.**

1) Pregnancy. 2) Breastfeeding women < 6 w PP .

3) Cancer breast. 4) Complicated DM.

5) Unexplained vaginal bleeding.

6) Active liver disease, cirrhosis or liver tumors.

7) Heavy smoking. 8) Severe HTN. 9) Migraine.
10) Epilepsy. 11) Current or past history of IHD.

12) Complicated Valvular heart diseases.

13) Prolonged immobilization.

14) Past thrombo-vascular accidents.

15) Current or past history of thromboembolic disorders.

B) Relative: **WHO medical eligibility criteria for starting COCs category 3.**

1) Age ≥ 35 years.
2) Breastfeeding women 6 weeks to 6 months after birth.
3) Non breastfeeding women during first 3 weeks after birth.
4) Light smoking.
5) Mild & moderate HTN.
6) Gallbladder disease.
7) Current treatment with antibiotics (rifampin & griseofulvin) or antiepileptic drugs.

Warning symptoms (pill-danger signals)

ACHES

A: **A**bdominal pain (may be mesenteric vascular occlusion).

C: **C**hest pain (may be pulmonary embolism).

H: Severe **H**eadache (may be prodroma of cerebral stroke).

E: **E**ye symptoms (may be retinal artery occlusion).

S: **S**evere leg pain (may be DVT).

Progesterone only pills (POPs / minipills)

- Contain only gestagen e.g. Microlut (LNG 30 µg).
- Efficacy: Use failure is 2-4/HWY.
- indicated ; In lactating mothers, In women aged > 35 years, or In presence of contraindication to COCs.

Mechanism of action:

A) Peripheral action (1ry mechanism):

1) Thick cervical mucus not suitable for sperm penetration.
2) Atrophic endometrium not suitable for implantation.
3) ↓↓ motility of tubes.

B) Central action (2ry mechanism): Inhibition of ovulation through inhibition of LH release

Progesterone only pills (POPs / minipills)

Initiation:

1) During first 7 days of menstrual cycle (preferably on 1st day of menses).
2) At any time provided that pregnancy is surely excluded.
3) Postpartum:
   a) *Non breastfeeding women:* Start immediately.
   b) *Breastfeeding women:* Delay until 6 weeks after birth.
4) Postabortion: Start immediately or èin first 7 days after abortion.

Schedule:

- Take 1 pill every day until all pills in pack are finished & repeat again without break.
- Take pills within 3 hours of same time each day (preferably in same time).

Progesterone only pills (POPs / minipills)

Missed pill regimen: Late in taking pills > 3 hours.

Breastfeeding within first 6 months	**Non breastfeeding or breastfeeding > 6 months**
-Take missed pill as soon as remembered. -Keep taking remaining pills on schedule. -No need for backup method.	-Take missed pill as soon as remembered. -Keep taking remaining pills on schedule. -Backup method for 48 hours.

Progesterone only pills (POPs / minipills)

Advantages

Contraceptive benefits:

1) Accepted by most couples.
2) Reversible with rapid return of fertility.
3) Available & Cheap.
4) Safe (few side effects).
5) . Easy to use.
6) Doesn't affect sexual relationship.
7) Can be used for lactating mothers.

Disadvantages:

1) Requires regular daily intake & resupply.
2) Incorrect use & missed pills are common which reduce efficacy.
3) Less effective than COCs (requires good compliance).
4) No protection from STDs including HIV.
5) Side effects (see later for details).

Progesterone only pills (POPs / minipills)

Side effects (risks or complications)

A) Menstrual disturbances:

1) Breakthrough bleeding or spotting.

2) Amenorrhea.

B) Other effects:

1) Nausea, vomiting, headache, dizziness, mood changes, weight gain & breast tenderness.

2) May be associated with Increased incidence of ectopic pregnancy due to affection of tubal motility (no evidence).

Progesterone only pills (POPs / minipills)

Contraindications

A) Absolute: WHO medical eligibility criteria for starting POPs **category 4.**

1) Pregnancy. 2) Cancer breast. 3) Unexplained vaginal bleeding.

B) Relative: WHO medical eligibility criteria for starting POPs **category 3.**

1) Breastfeeding women < 6 weeks after birth.

2) Active liver disease, cirrhosis or liver tumors. 3) Gallbladder disease.

4) Current treatment with antibiotics (rifampin & griseofulvin) or antiepileptic drugs.

Progesterone only injectable contraceptives (PICs)

Types & composition:

A) Depo-provera: Depot MPA (DMPA) 150 mg.

B) Noristerat or Noricept: Norethisterone enanthate (NET-EN) 200 mg.

Mechanism of action: As POPs.

How to take?

Initiation: As POPs.

Schedule:

1) DMPA: IM injection / 3 months ± 2 weeks (not > 2 weeks to maintain efficacy).
2) NET-EN: IM injection / 2 months ± 2 weeks (not > 2 weeks to maintain efficacy).

Progesterone only injectable contraceptives (PICs)

Efficacy: Use failure is < 1/HWY (nearly as tubal sterilization).

Indications:

A) Contraceptive use: As POPs + the followings:

1) If at least 1 year of pregnancy spacing is desired & terminal contraception.
2) Sickle cell disease (decrease frequency & severity of crisis).
3) Epilepsy (increase seizur threshold & not affected by antiepileptic drugs).

B) Non contraceptive uses:

1) Precocious puberty.
2) Fibroid.
3) AUB-O.
4) Endometriosis.
5) Hirsutism.
6) Endometrial carcinoma.

Progesterone only injectable contraceptives (PICs)

A) Contraceptive benefits	B) Non contraceptive benefits
1) Accepted by couple. 2). Reversible. 3) Available. 4). Cheap 5) Safe 6) Doesn't affect sexual relationship. 7) Easy to use. 8) Can be used for ***lactating mothers.*** 9) Highly effective 10) Suitable for ***sickle cell disease patients.*** 11) Long acting. 12) Suitable for ***epileptic patients.***	***Decreasing the followings:*** 1) Risk of endometrial & ovarian cancer. 2) Risk of fibroid. 3) Risk of ectopic pregnancy. (???) 4) Risk of PID. 5) Risk of vaginal moniliasis. 6) Symptoms of endometriosis. 7) Frequency & severity of sickle cell crisis. 8) Frequency of epileptic attacks by increasing seizures threshold in epileptic patients.

Progesterone only injectable contraceptives (PICs)

DISADVANTAGES	CONTRA-INDICATIONS
A) Contraceptive effect & side effects **can't** be stopped immediately (Long acting). **B)** Delayed return of fertility (at least 4-6 months > other methods).**C)** No protection from STDs including HIV. D) Side effects : ***1- Menstrual disturbances:*** Commonest & main cause of discontinuation. Include *breakthrough bleeding or spotting, amenorrhea, and heavy or prolonged bleeding.* *2-Oncogenic effects:* May enhance growth of preexisting cancer breast. *3- Other effects: reduce* bone density-→ osteoporosis later on.	*A) Absolute:* WHO medical eligibility criteria for starting PICs **category 4.** 1) Pregnancy. 2) Cancer breast. 3) Unexplained vaginal bleeding. *B) Relative:* WHO medical eligibility criteria for starting PICs **category 3**. 1) Breastfeeding < 6 weeks after birth. 2) Active liver disease, cirrhosis or liver tumors. 3) Severe HTN. 4) Complicated DM. 5) Current or history of IHD. 6) Past thrombo-vascular accidents.

Combined injectable contraceptives (CICs)

Types & composition:

A) Cyclofem: 25 mg DMPA + 5 mg estradiol cypionate.

B) Mesigyna or Mesocept: 50 mg NET-EN + 5 mg estradiol valerate.

Mechanism of action: As COCs.

How to take?

Initiation: As COCs.

Schedule: IM injection / 1 month ± 3 days (not > 3 days to maintain efficacy).

Efficacy: Use failure is < 1/HWY (nearly as tubal sterilization).

Indications:

Contraceptive use: As COCs.

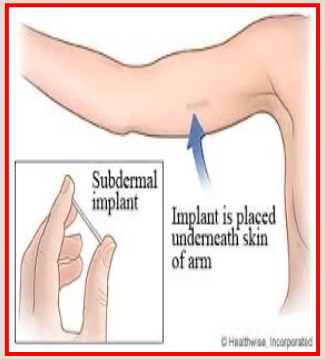
Combined injectable contraceptives (CICs)

ADVANTAGES	DISADVANTAGES
Contraceptive benefits: As COCs + the followings: 1) Causes less menstrual disturbances than PICs. 2) Return of fertility is more rapid than PICs.	A) Contraceptive effect & side effects can't be stopped immediately (drug can't be withdrawn). B) Can't be used for lactating mothers. C) No protection from STDs including HIV. D) Side effects (in details).

CICs are similar to COCS regarding Side effects (risks or complications), Contraindications, Key counseling topics and Warning symptoms

Subdermal contraceptive implants

Definition: Capsules implanted under skin of inner side of upper arm & slowly release steady level of progestin into blood stream for long time. Different *Types & composition*:



A) Norplant:

- 6 silastic match-sized capsules each is ***[34 ×2.4 mm].***
- content: 36 mg levonorgestrel (LNG).
- releasing rate: Initially, 85 µg/day ↓↓ gradually to reach 30 µg/day after 2 years.

Duration of action: 5 years.

B) Javelle: As norplant but 2 rod capsules each is 43 × 2.5 mm.

C) Implanon:

- 1 rod capsule 40 × 2 mm. content: 68 mg etono-gestrel (3-keto-desogestril).
- releasing rate: Initially, 67 µg/day ↓↓ gradually to reach 30 µg/day after 2 years.(total 3 years).

Subdermal contraceptive implants

Mechanism of action: As POPs.

Efficacy: Use failure is < 1/HWY (nearly as tubal sterilization).

How to use?

Insertion: → Timing: As POPs (initiation). Site: Under skin of inner side of upper arm. *Method*: By special applicator through small incision (Implanon insertion is easier).

Removal: → Timing: On request or after expiry (5 years for Norplant & 3 years for Implanon).

Method: By minor surgical technique (Implanon removal is easier).

Indications: If pregnancy spacing for many years is desired & terminal contraception.

Subdermal contraceptive implants

ADVANTAGES	DISADVANTAGES
1. Accepted by couple & Available. 2. Rapidly effective (within few hours after insertion). 3. Reversible with rapid fertility return. 4. Easy to use, and Safe (↓side effect). 5. Highly effective & Long acting. 6. Doesn't affect sexual relationship. 7. Can be used for **lactating mothers**.	A) Insertion & removal need trained healthcare provider. B) Minor surgical technique is required for both insertion & removal. C) No protection from STDs including HIV. D) Side effects : *A) Menstrual disturbances:* Commonest & main cause. Of discontinuation . 1) Breakthrough bleeding or spotting. 2) Amenorrhea (but < PICs). 3) Heavy or prolonged bleeding. *B) Other effects:* Headache, dizziness, mood changes, weight gain & breast tenderness.

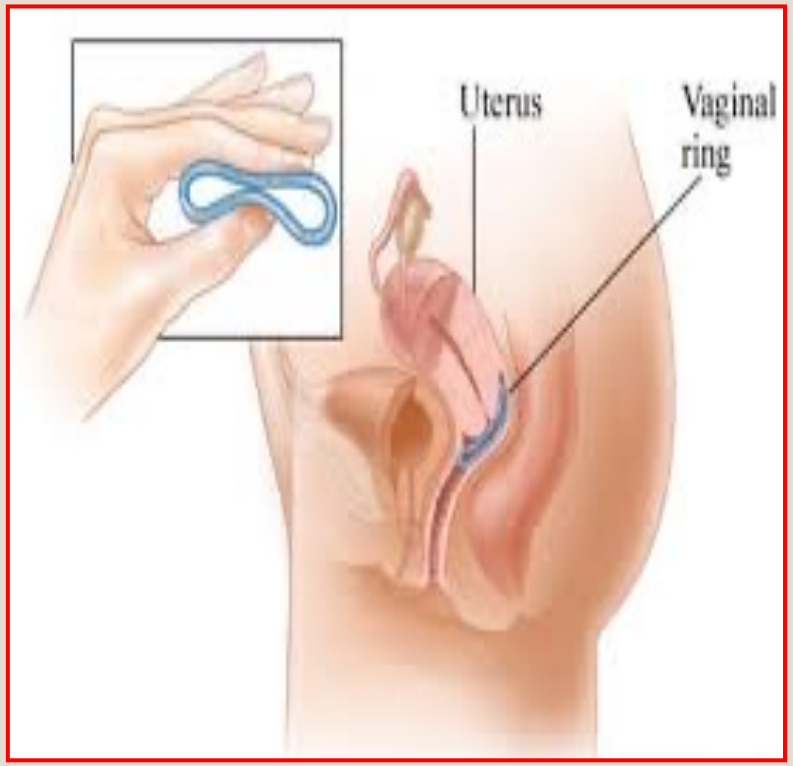
CONTRAINDICATIONS : as POPs

- FOR INSERTION AND REMOVAL OF CONTRACEPTIVE IMPLANT VIDEO FOLLOW THIS LINK:

https://drive.google.com/file/d/1_gSzynYRJyCfo3b59USmyi53Go0xHYnH/view?usp=sharing

Vaginal Ring

- **Description:** Flexible, soft, transparent ring with outer diameter of 54 mm & cross section of 4 mm (*Nova Ring*) & it releases *120 µg etonogestrel & 15 µg EE daily* that are absorbed from vaginal mucosa.
- **Mechanism of action:** Mainly by inhibition of ovulation.
- **How to use?** → Woman inserts ring in vagina in last day of menses → leaves it for 3 weeks then removes it & remains ring-free for 1 week (during which withdrawal bleeding occurs) then new ring is inserted again.



Disadvantages include; 1) Foreign body sensation. 2) Coital problems. 3) Expulsion of ring may happen. 4) No protection from STDs including HIV.

Intrauterine contraceptive device (IUCD)

A) Non medicated (inert) IUCDs: Not produced or used now. Examples: *Lippes loop, Saf-T coil & Dalkon shield.*

B) Medicated (bioactive) IUCDs: (Cupper,Progesterone, Antifibrinolytic-IUDs)

1) Copper medicated IUCDs: More effective than non medicated IUCDs; include:

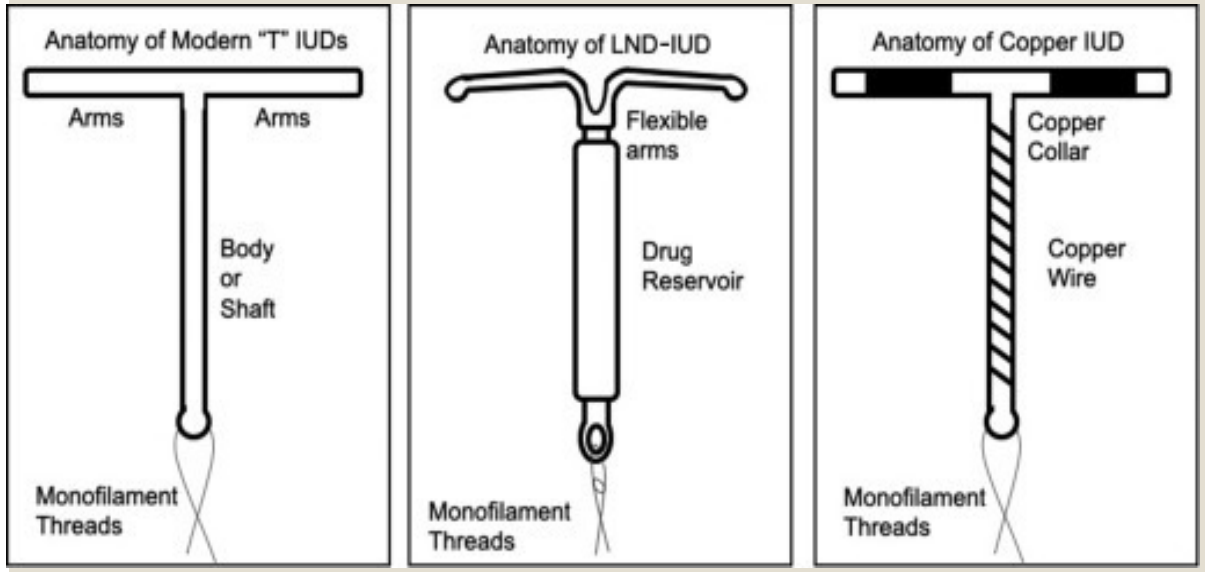
   a) Copper T: T-200, T-220, T-300 & T-380A (according to surface area of Cu).

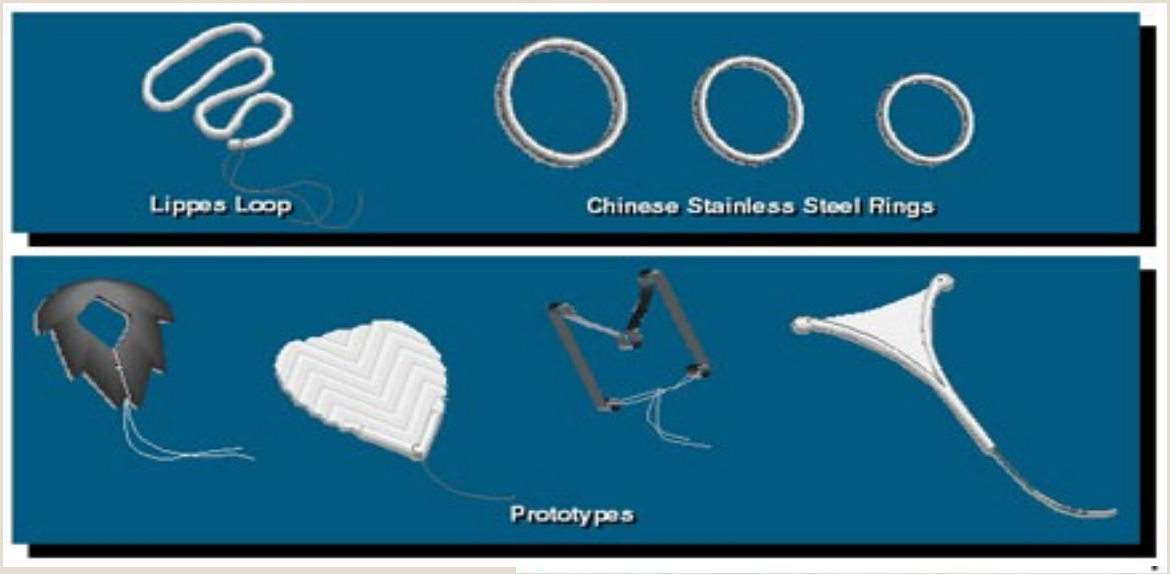
   b) Copper 7 (Gravigard): Designed like number 7.

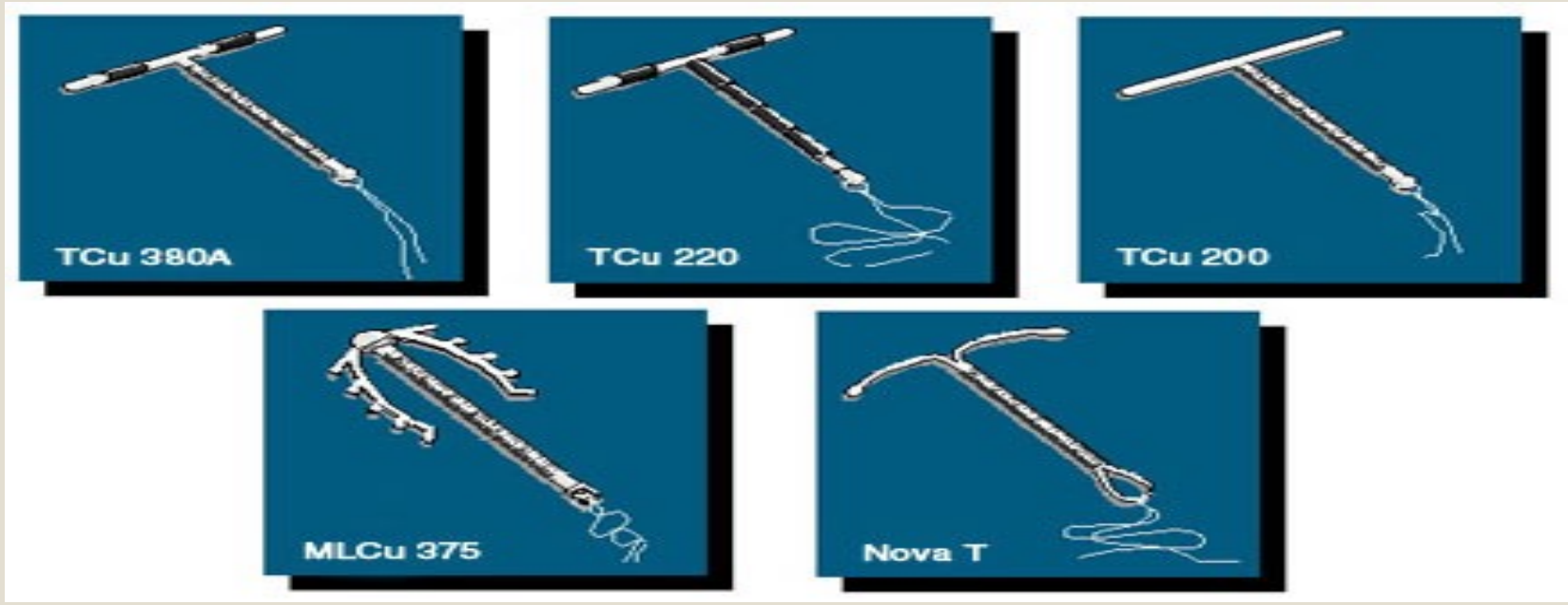
   c) Nova T (Novagard): Cu is put in silver core (silver reduce fragmentation of Cu leading to prolongation of life span of IUCD).

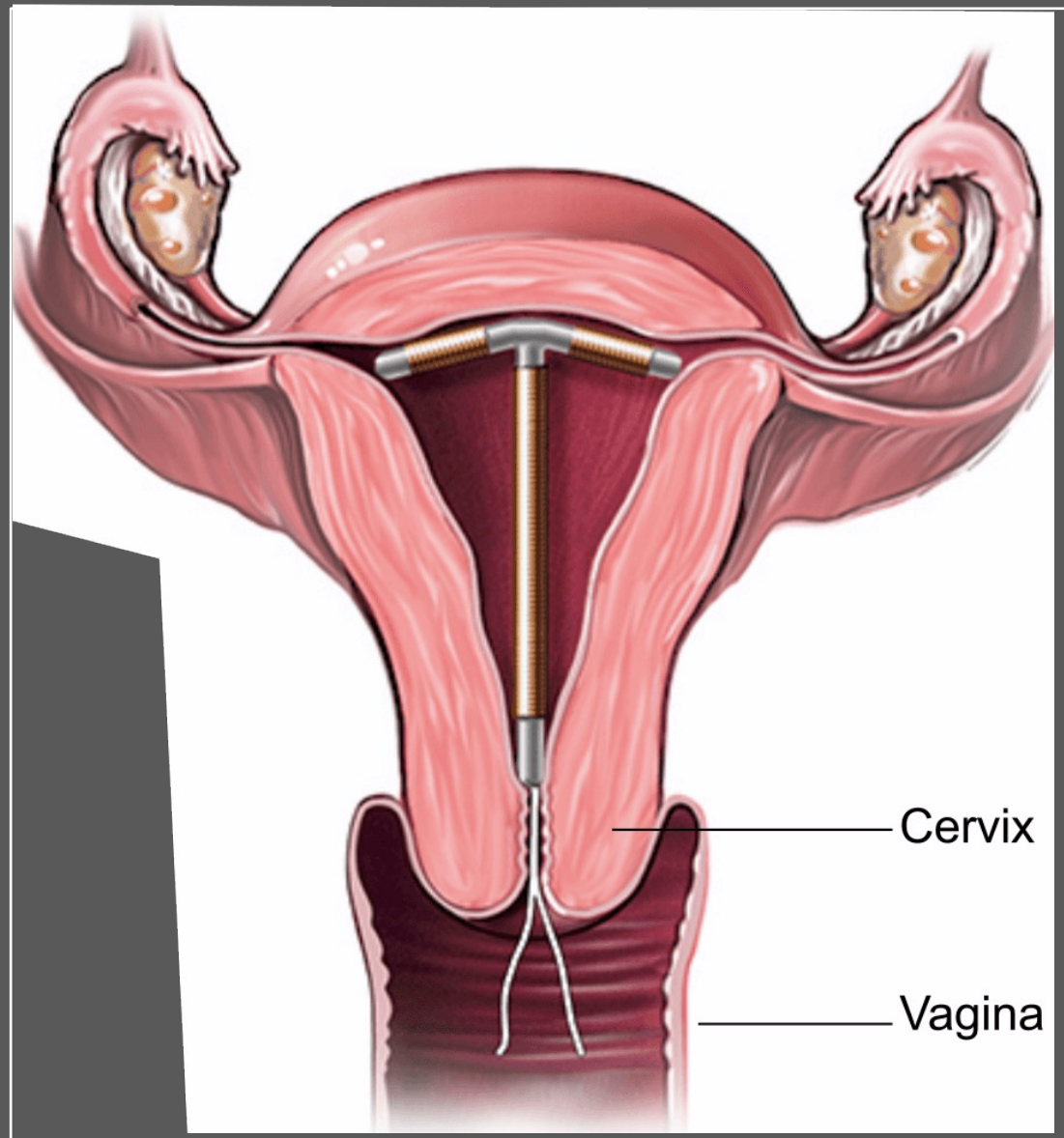
   d) Multiload: Transverse arm is horse- shoe with serrated external border.

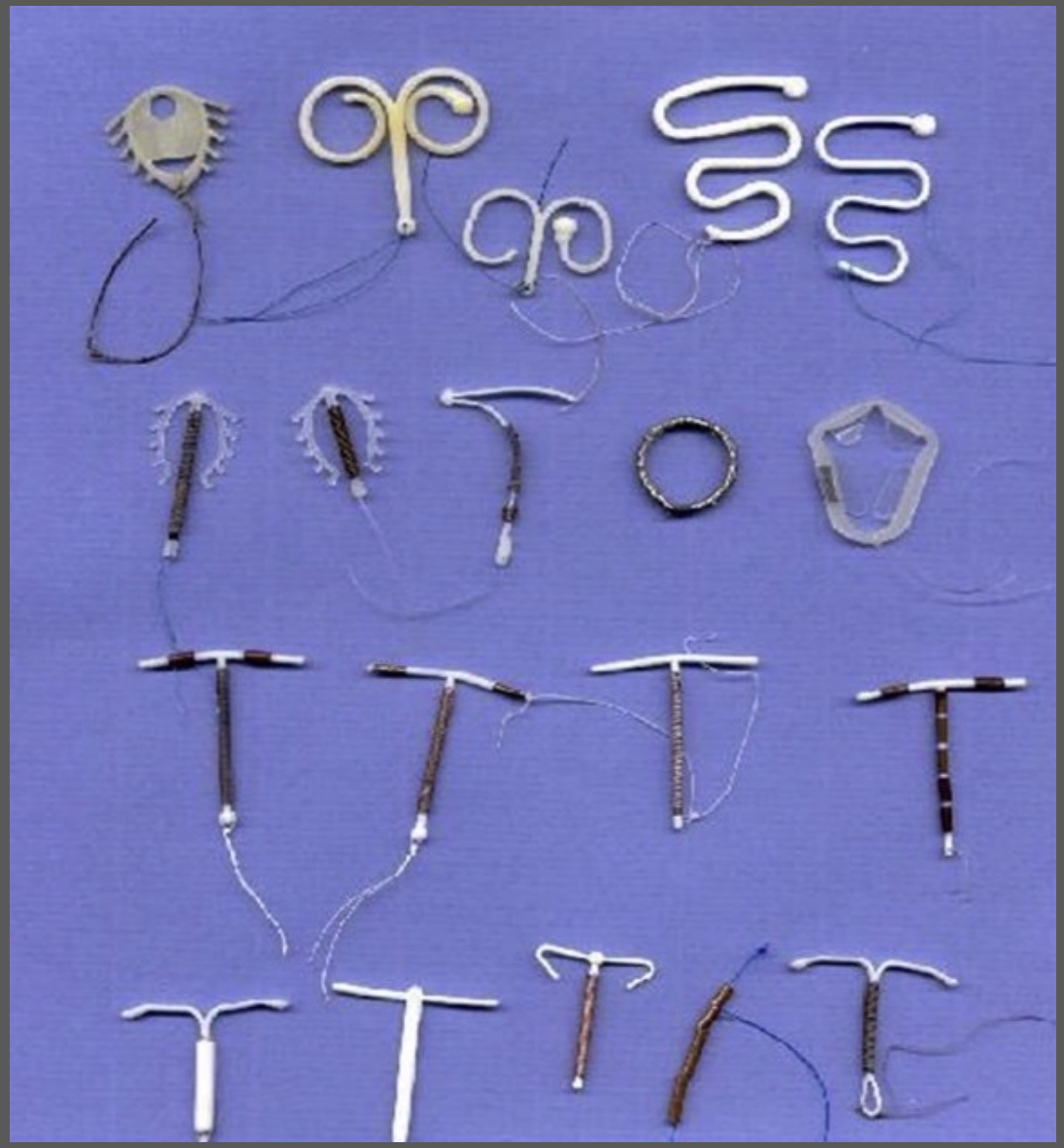
Duration of action: 10 years.


Anatomy of Modern "T" IUDs
Arms
Arms
Body
or
Shaft
Monofilament
Threads
Anatomy of LND-IUD
Flexible
arms
Drug
Reservoir
Monofilament
Threads
Anatomy of Copper IUD
Copper
Collar
Copper
Wire
Monofilament
Threads


Lippes Loop
Chinese Stainless Steel Rings
Prototypes


TCu 380A
TCu 220
TCu 200
MLCu 375
Nova T


Cervix
Vagina



Intrauterine contraceptive device (IUCD)

2) Progesterone medicated IUCDs: Hormone releasing intrauterine system (IUS) .

TYPES:

a) Progestasert: Megestrol releasing IUCD with short duration of action (1 year).

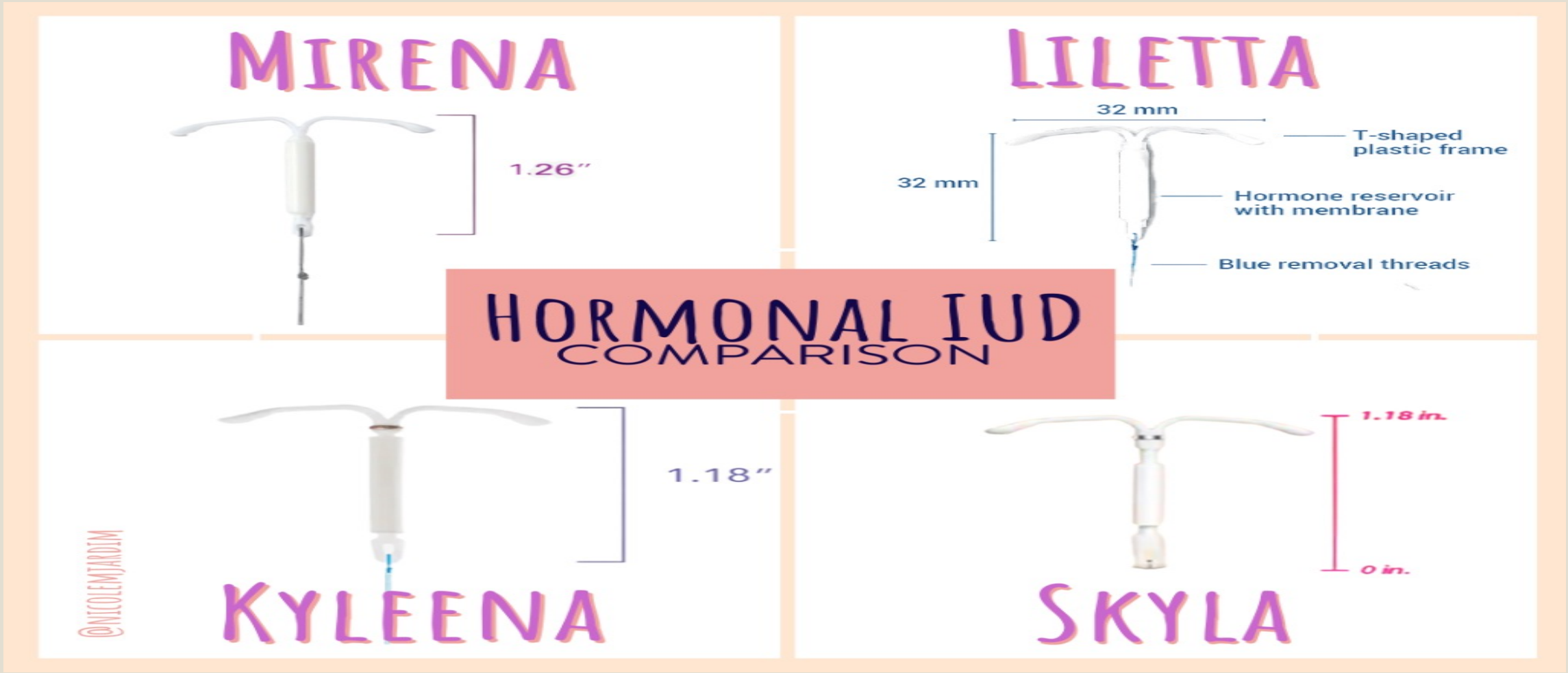
b) Mirena (LNG-IUS): LNG releasing IUCD with long duration of action (5 year).

Advantage: reduces duration & quantity of menstrual bleeding & pain.

Disadvantage: Expensive.

3) Antifibrinolytic medicated IUCDs: Antifibrinolytic (as Trasylol) is added to reduce menstrual flow.

Intrauterine contraceptive device (IUCD)



Intrauterine contraceptive device (IUCD)

Mechanism of action:

A) Local sterile inflammatory reaction in uterine cavity: Leading to cellular & biochemical changes in endometrium & uterine fluid resulting in:

1) Swollen edematous ulcerated devitalized endometrium not suitable for implantation. 2) Sperm immobilization. 3) Phagocytosis of sperms & zygote.

4) Inhibition of implantation & lysis of blastocyst.

5) Increased local PGs release: Leading to: *Direct inhibition of implantation & acceleration of uterine & tubal motility* → expulsion of zygote.

Intrauterine contraceptive device (IUCD)

Mechanism of action: (continued)

B) Action of copper: In copper medicated IUCDs.

1) Greater local sterile inflammatory reaction in uterine cavity.

2) Inhibition of endometrial enzymes, endometrial glycogen metabolism & DNA synthesis. 3) Hostile cervical mucus.

4) Impairment of sperm capacitation & migration.

5) Acceleration & modification of PGs production.

C) Action of progesterone: In progesterone medicated IUCDs.

1) As a contraceptive method: As POPs.

2) As a treatment of AUB-O.

Intrauterine contraceptive device (IUCD)

INSERTION	
1) Interval insertion: a) During menstruation (preferably on last day of menses) because: 1- Pregnancy is excluded. 2- Insertion is easy & painless 3- Spotting after insertion is mistaken as menstrual blood. b) At any time provided that pregnancy is surely excluded.	***2) Postpartum:*** a) Immediate postpartum: Inserted manually after vaginal delivery (within 10-20 minutes after delivery of placenta) or during CS. b) Within 48 hours after vaginal delivery: Using ring or placental forceps or special applicator. c) Delayed postpartum: After 4 weeks of birth. ***3) Postabortion:*** Immediately or after 4 weeks of abortion. ***4) Post-extraction:*** New IUCD can be inserted immediately after removal of old one unless there is complication from the old.

Intrauterine contraceptive device (IUCD)

***Insertion* techniques:**

1) ***Pushing technique:*** Lippes loop (high incidence of perforation).
2) ***Withdrawal technique:*** other types (less incidence of perforation).

Removal:

-Timing: On request or after expiry.

-Method: By gentle pulling on threads.

Efficacy: Use failure is 2-4/HWY.

Intrauterine contraceptive device (IUCD)

IUCD INSERTION VIDEO VIA THIS LINK:

https://drive.google.com/file/d/1iYv3LRbopAiNkmr91vOJus-OYvjihkWp/view?usp=sharing

Intrauterine contraceptive device (IUCD)

Indications:

A) Contraceptive use:

1) In lactating mothers.
2) In women aged > 35 years.
3) In women refusing hormonal contraception.
4) In multiparas having children

B) Non contraceptive use:

1) DUB (progesterone or antifibrinolytic medicated IUCDs).
2) After adhesiolysis in intrauterine synechiae (the only indication of Lippes loop today).

Intrauterine contraceptive device (IUCD)

Contraindications

A) Absolute: WHO medical eligibility criteria for using IUCD **category 4**.

1) Pregnancy.
2) Cervical, endometrial or ovarian cancer.
3) Unexplained vaginal bleeding.
5) Distorted uterine cavity.
4) Current or recent PID, STD, septic abortion or pelvic TB.

B) Relative: WHO medical eligibility criteria for using IUCD **category 3**.

1) Risk of development of STDs.
2) HIV infection.

Intrauterine contraceptive device (IUCD)

Warning symptoms:

P: Abdominal **P**ain (may be ectopic pregnancy).

A: **A**menorrhea (may be pregnancy).

I: **I**nability to feel threads.

N: **N**oticeable discharge with fever (infection).

Intrauterine contraceptive device (IUCD)

ADVANTAGES	DISADVANTAGES
1) Accepted by couple, Available. 2) Long acting, Cheap 3) Reversible with very rapid return of fertility. 4) Safe (no systemic side effects). 5) Easy to use & Doesn't affect sexual relationship. 6) Very effective. 7) Can be used for **lactating mothers**.	A) Insertion & removal need trained healthcare provider. B) No protection from STDs including HIV. C) Side effects (see later for details): *1-Menstrual disturbances* *2-Pain. 3- PID. 4- pregnancy on top* *5- Expulsion 6- Uterine perforation* *7- Others: vaginal discharge, male discomfort, cervical ectopy.*

MENSTRUAL DISTURBANCES WITH IUCD [AUB-I]

The commest cause of discontinuation of IUCD is AUB.

HEAVY MENSTRUAL BLEEDING (HMB)	IRREGULAR BLEEDING
Etiology: a) Endometrial hyperemia (due to inflammatory reaction). b) Premature shedding of endometrium (due to abundant release of PGs). c) Increased fibrinolytic activity. d) Disturbed platelet function. **Treatment:** a) Anti-PGs ± antifibrinolytics. b) Replacing with LNG-IUS c) Changing contraceptive method.	***Etiology:*** a) During insertion (spotting). b) Trauma (cervical laceration or perforation). c) Ectopic pregnancy. ***Treatment:*** Treatment of the cause.

ABDOMINAL PAIN WITH IUCD

Types & causes:

1- Acute abdominal pain: Perforation, acute PID & ectopic pregnancy.

2- Chronic lower abdominal heaviness & low backache: Chronic PID & pelvic congestion.

3- Uterine cramps & dysmenorrhea: Abnormal position of IUCD inside uterus, starting of expulsion & PGs release.

Treatment:

1) Analgesics ± antispasmodics.
2) Treatment of the cause.
3) Removal of IUCD (in severe cases).

PID with IUCD

Incidence: 1.5 times > normal (specially in 1st month after insertion).

Etiology: 1) Septic instrumentation during insertion.

2) Threads increase incidence of ascending infection.

3) Increased menstrual flow with IUCD.

Organisms: The only pelvic infection that is related to IUCD is actinomycosis (PID with actinomycosis is reported only in IUCD users).

C/P: = refer under title PID

Prevention: Insertion under complete aseptic conditions.

Treatment: Removal of IUCD + treatment of PID.

Pregnancy on top of IUCD

- ***IUCD + missed period should be considered pregnancy till proved otherwise & this pregnancy should be considered ectopic till proved otherwise.***
- **Incidence:** 0.2-4% (mostly in 1st year after insertion).
- **Types:** may be intrauterine or ectopic. Ectopic is rare (1/30 of pregnancies on top of IUCD). ***Intrauterine pregnancy (pregnancy on top of IUCD): may be due to:*** Perforation, Expulsion, Low insertion, Expiry. Or undiagnosed Uterine anomalies (as bicornuate uterus).
- **Risks**: include Abortion: (In 50% of cases & usually complicated by infection septic abortion). Preterm labor: (4 times > normal). PROM and APH.
- **Diagnosis:** = Diagnosis of pregnancy (pregnancy test + ultrasound).
- **Management:** a) Accessible threads: Remove IUCD immediately (this reduce risk of abortion to 25%). b) Inaccessible threads: Leave IUCD in place + follow up as a high risk pregnancy.

UTERINE PERFORATION WITH IUCD

Etiology & risk factors:

1) Inexperience of provider. **2)** Insertion by pushing technique.

3) Early postpartum insertion between 48 hours & 4 weeks after deliver.

4) Nulligravidas. **5)** Acute AVF or RVF uterus. 6) Presence of uterine scar.

Complications:

1) Perforation into bladder, broad ligament or peritoneal cavity leading to inflammatory reaction (specially with copper medicated IUCDs).

2) Pelvic abscess (due to 2ry infection). **3)** Intestinal obstruction (due fibrosis).

Clinical picture:

1) Asymptomatic & discovered on routine examination.

2) Acute abdominal pain during insertion ± vaginal spotting.

3) Missed loop. **4)** Pregnancy.

EXPULSION OF IUCD

Etiology & risk factors:

(1) Inexperience of provider.**(2)** Immediate postpartum insertion (highest incidence).

3) Lippes loop (has higher expulsive rates than copper T & 7).**(4)** Small IUCD.

5) Young age **(6)** Nulliparity.

Clinical picture:

1) Pain or irregular bleeding (partial expulsion). **2)** Lengthening of threads.

3) Presence of IUCD in cervical canal or vagina.

4) Passage of IUCD per vagina.

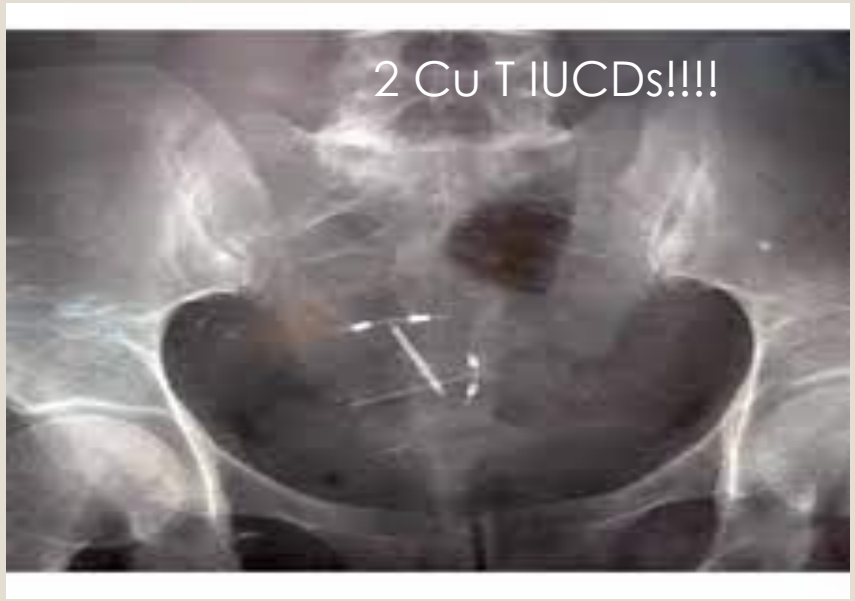
5) Missed loop. **6)** Pregnancy.

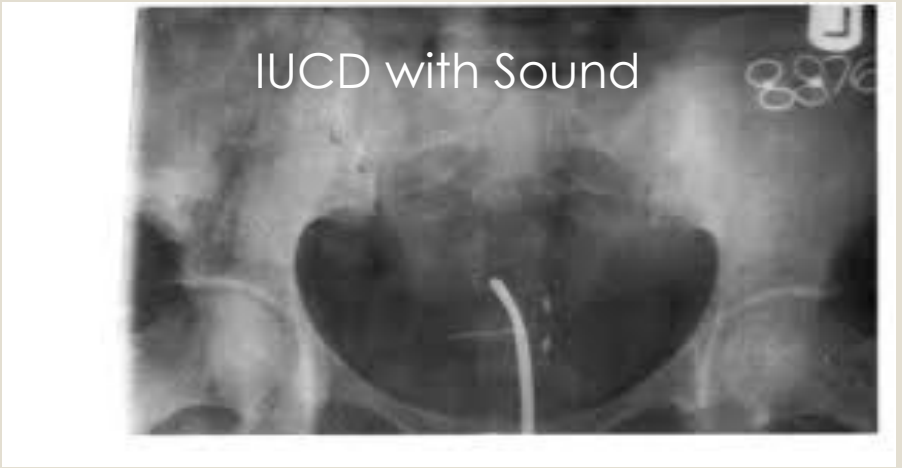
MISSED LOOP

Definition: Inability to feel threads by user woman.

Etiology:

1) Deep vagina &/or short fingers.
2) Sticky threads to vaginal wall or cervix.
3) Short or cut threads.
4) Pregnancy.
5) Perforation,
6) Expulsion
7) Abnormal position of IUCD in uterus.





MISSED LOOP

Diagnosis:

1) *Careful vaginal & speculum examination:* To exclude first 3 causes.
2) *Pregnancy test:* To exclude pregnancy.
3) *Uterine sounding:* To feel click if IUCD is intrauterine.
4) *Ultrasound:* To determine if IUCD is intrauterine or not.
5) *Pelviabdominal plain X-ray*: A-P view:

Then manage as follows: 👇

(A) If IUCD is absent: -→ Expulsion.

(B) If IUCD is present: → IUCD is either *intrauterine* or *extrauterine* & to differentiate, perform pelviabdominal plain X-ray (A-P & lateral views) with sound in uterus:

1- If IUCD & sound are overlapping: Intrauterine IUCD.
2- If IUCD is away from sound: Extra-uterine IUCD.

MISSED LOOP

Treatment

1) Inability to feel threads due to deep vagina or short fingers: Learn user woman how to feel threads.

2) Short or cut threads: Change device & leave sufficient thread length.

3) Pregnancy: See pregnancy on top of IUCD

4) Abnormal position of IUCD in uterus: Extraction by Bozeman's forceps or via hysteroscopy.

5) Expulsion: Counsel about the cause & manage accordingly.

6) Perforation:

👇

a) Laparoscopic extraction: The usually done method.

b) Extraction through posterior colpotomy: May be done if IUCD is in Douglas pouch.

c) Laparotomy: Rarely done in cases of difficult or failed above methods.

Surgical contraception

Types:

A) Female sterilization:

1) **Tubal sterilization:** Widely used worldwide.

2) **Ovarian sterilization:**

   a) Irradiation or removal of ovaries (obsolete now).

   b) Covering ovaries by plastic pouch (under trial).

3) **Hysterectomy:** Not done nowadays for contraceptive purpose due to high morbidity & mortality.

4) **Menstrual extraction or mini abortion:** See induction of abortion.

B) Male sterilization: Vasectomy.

Tubal Ligation (sterilization)

Definition: Disturbance of continuity of fallopian tubes.
Mechanism of action: Prevention of fertilization.
Timing:
1) **Postpartum:** a) Immediately or within first 7 days after vaginal delivery.Or ,b) During CS.
2) **At any time between pregnancies:** Except at 1-4 weeks after delivery.

Routes (approaches):
1) **Abdominal:**
   a) *Laparotomy:* During CS or other abdominal operations.
   b) *Mini-laparotomy:*

1- Postpartum: Via small sub-umbilical incision (uterus is still enlarged).
2- Interval: Via small suprapubic incision under general or local anesthesia.

c) Laparoscopy.

2) Vaginal: Hysteroscopy, culdoscopy & posterior colpotomy.

Tubal Ligation (sterilization)

Methods (surgical techniques):

1) Laparotomy & mini-laparotomy techniques:

a) Pomeroy's technique: Loop from tube is excised after ligating its base by single absorbable suture (absorption of suture allows separation of cut ends of tube so, recanalization doesn't occur).

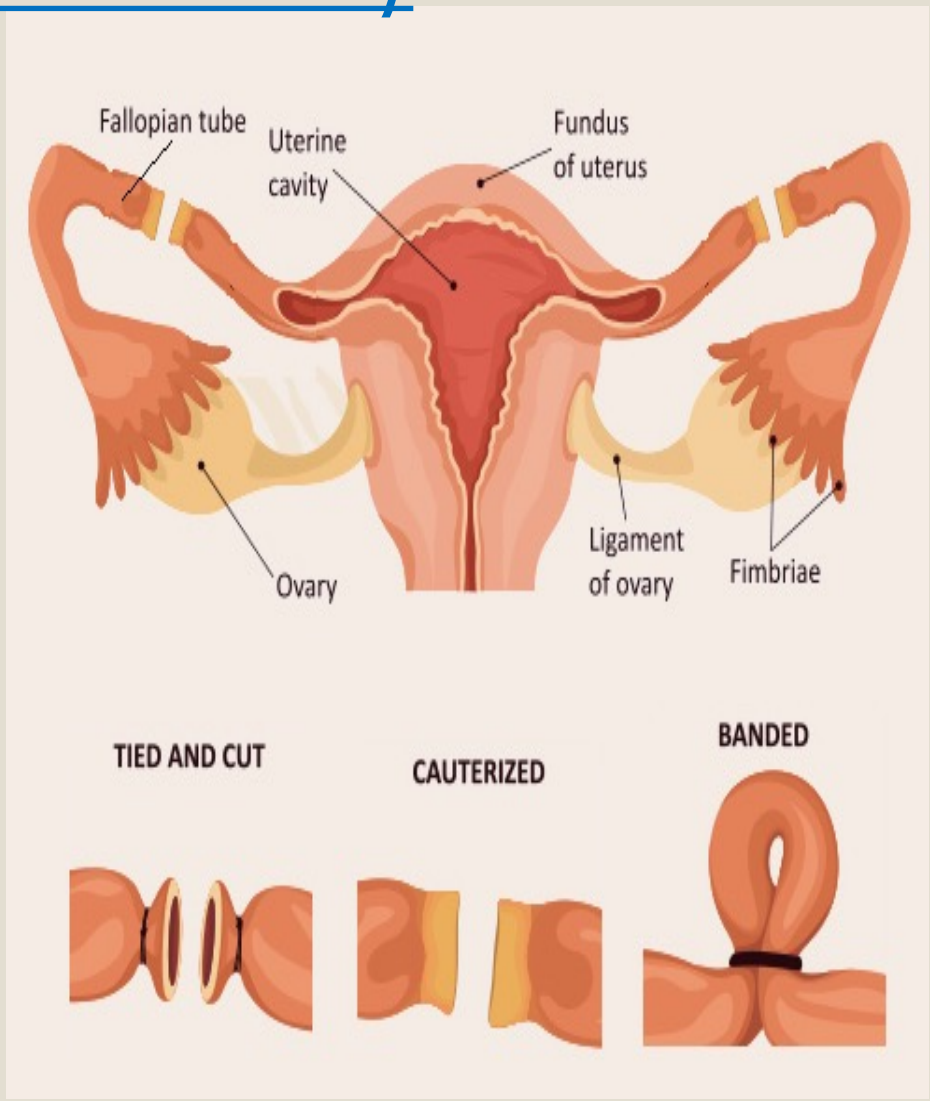
b) Madlener's technique: Loop from tube is crushed by cross-clamping its base then ligated by non absorbable sutures but not excised.

c) Irving's technique: Loop from tube is cut & uterine end of tube is buried into posterior wall of uterus to avoid recanalization.

d) Cook's technique: Loop from tube is cut & uterine end of tube is buried into round ligament to avoid recanalization.

e) Uchida's technique: Loop from tube is cut & uterine end of tube is buried into broad ligament to avoid recanalization.

f) Fimbriectomy: Excision & ligation of tubal fimbriae.



Tubal Ligation (sterilization)

2) Laparoscopic techniques:

a) Coagulation of tubal segment: By unipolar or bipolar diathermy.

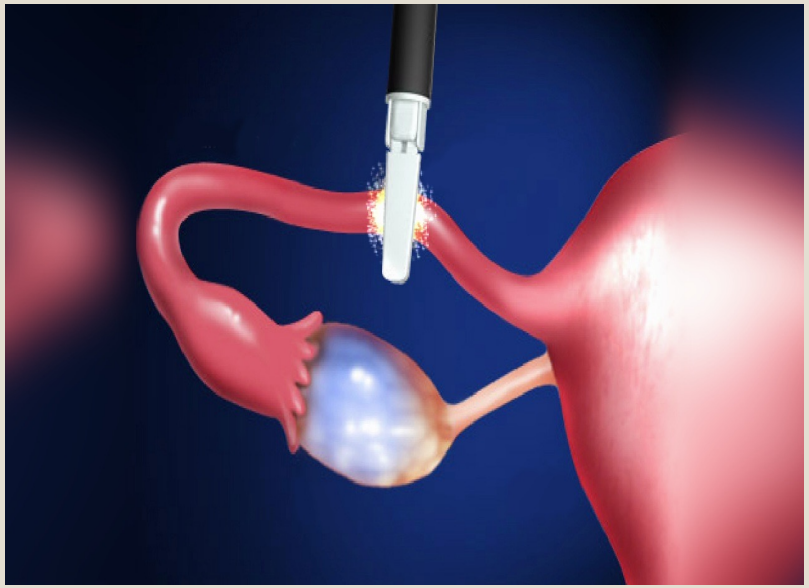
b) Application of silastic rubber band: Falope or Yoon ring.

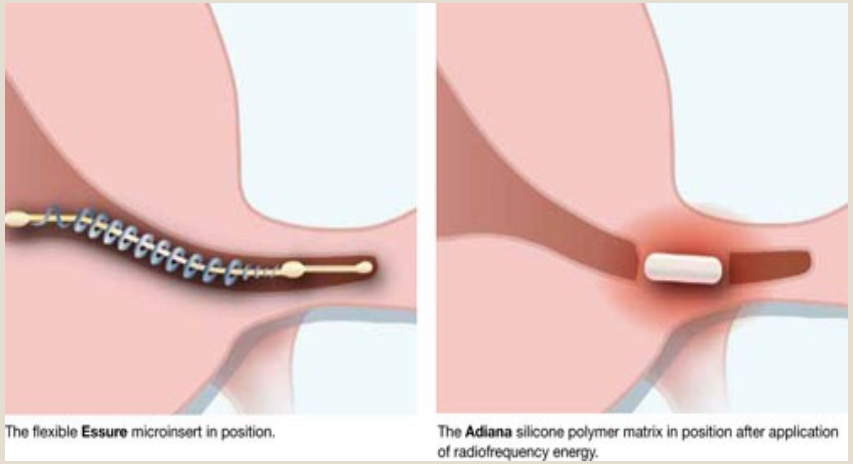
c) Application of plastic or metal clip: Hulka or Filshie clip.

3) Hysteroscopic techniques: Injection of chemical agents (as quinacrine or silver nitrite) to cause scarring & blocking of proximal ends of tubes.

4) Culdoscopic techniques: As laparoscopic techniques.

5) Posterior colpotomy techniques: Get access to tubes by opening Douglas pouch & ligate or destroy tubes by suitable method.





The flexible **Essure** microinsert in position.

The **Adiana** silicone polymer matrix in position after application of radiofrequency energy.

Tubal Ligation (sterilization)

Efficacy: Failure rate is < 1/HWY.

Indications:

1) *Medical disorders contraindicating pregnancy:* As advanced heart or renal disease.

2) *Surgical problems contraindicating pregnancy:* As uterine sacropexy.

3) *Obstetric indications:* As repeated CS or Rh isoimmunization with repeated fetal death.

4) *Psychic disturbance.*

5) *Permanent contraception.*

Contraindications:

1) Young woman.

2) Irregular marital relationship.

Tubal Ligation (sterilization)

ADVANTAGES	DISADVANTAGES/COMPLICATIONS
A) Contraceptive benefits: 1) Highly effective. 2) Safe (few side effects). 3) Doesn't affect sexual relationship. 4) Can be used for **lactating mothers**. **B) Non contraceptive benefits:** ↓↓ risk of ovarian cancer & PID.	1) Irreversible method. 2) Have relatively high initial cost. 3) Exposes woman to small risk of surgical complications. 4) No protection from STDs including HIV. 5) Side effects (in details). ***A) Short term complications:*** *as hemorrhage, thermal injury of adjacent organs, ischemic pains after clip application, anesthetic complications.* ***B) Long term complications:*** *1) Post-sterilization syndrome:* *2) Postoperative adhesions.*

Vasectomy

Definition: Ligation & cutting of vas deferens (tubes that carry sperms from testes to urethra).

Mechanism of action: Prevention of mixing of sperms è seminal fluid → no sperms in ejaculated semen → no fertilization.

How to do? → By minor surgical technique.

Efficacy: Failure rate is < 1/HWY.

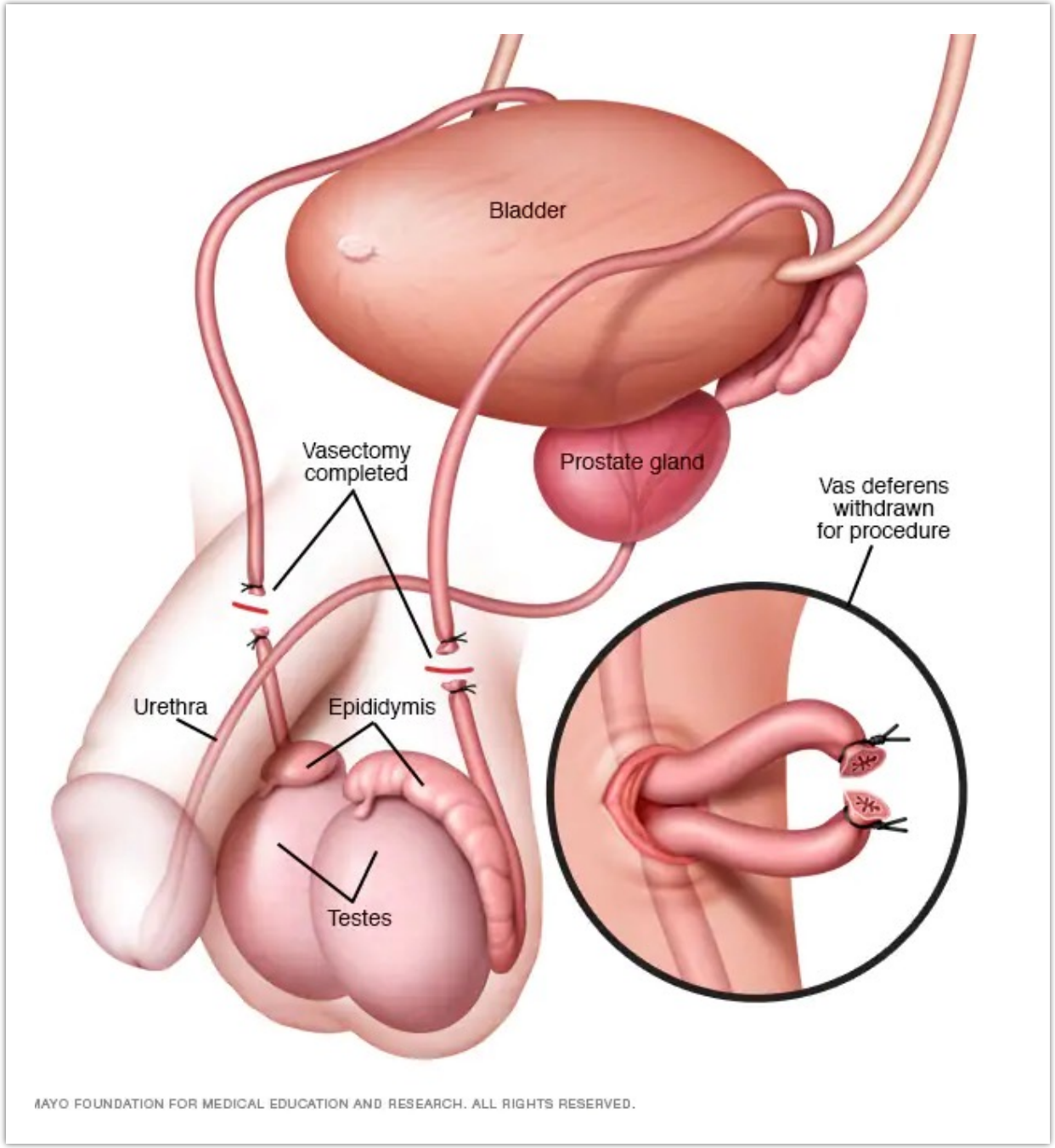
Advantages:

1) Highly effective.
2) Safe (no long term side effects).
3) Doesn't affect sexual relationship.
4) Simpler than tubal ligation.

Disadvantages:

1) Irreversible method.
2) Not immediately effective (waiting period of 12 weeks or 20 ejaculations is recommended before couple can rely on vasectomy to prevent pregnancy).
3) No protection from STDs including HIV.
4) Side effects (in details).A) Scrotal hematoma. B) Wound infection.

C) Epididymitis. D) Sperm granuloma. E) Anesthetic complications.



For watching animation video click the following link

https://drive.google.com/file/d/1FnXEcXAhOJhrtnVs1bzOTb3IjWJwaMWb/view?usp=sharing

Emergency contraception

Definition: Prevention of pregnancy after unprotected intercourse.
Indications: Unprotected intercourse which includes the following situations:
A) No contraceptive method used: As in rape.
B) Contraceptive method didn't function properly: As in ruptured condom.
C) Contraceptive method is used incorrectly: As in missed pills.
Methods:

A) Emergence contraceptive pills (ECPs)☹see next table)

B) Copper IUCD: Insertion within 5 days after intercourse (highly effective).

C) High dose estrogen: 5 mg EE taken within 72 hours after intercourse.

D) Mifepristone (RU486): Has anti-progesterone effect.

E) GnRH agonists: Suppress gonadotropins leading to CL dysfunction.

F) Danazol.

Emergency contraception

	COCs regimen (Yuzpe regimen)	POPs regimen
Dose	2 **doses**; each contains at least 0.1 mg EE + 0.5 mg LNG (4 tablet of standard LDP)	2 doses; each = 750 µg LNG (1 tablet of pills containing 750 µg LNG or 25 tablets of pills containing 30 µg LNG)
Administration	**1st dose:** Taken as soon as possible & not > 72 hours after coitus	
	2nd dose: Taken 12 hours after 1st dose	
Efficacy	Less effective	**More effective**
Side effects	More common	**Less common**
Mechanism of action	**Depending on time of administration during menstrual cycle, pill may inhibit or delay ovulation or have other contraceptive effects after ovulation (but they don't interfere è already established pregnancy)**	

Methods of postpartum contraception

Non breastfeeding women: All methods (except LAM) can be used but COCs should be delayed until 3 weeks after birth (due to high postpartum risk of DVT).

Breastfeeding women:

A) 1st choice methods: Non hormonal methods (can be used *immediately* postpartum):

1) Lactational amenorrhea (LAM). 2) Barrier methods. 3) IUCD.

4) Female sterilization.

B) 2nd choice methods: Progesterone only contraceptives (used after **6 wks.** postpartum).

1) Progesterone only pills (POPs). 2) Progesterone only injectable contraceptives (PICs).

3) Subdermal contraceptive implants. 4) Progesterone medicated IUCDs.

C) 3rd choice methods: Combined hormonal contraceptives (used after **6 months** postpartum).

1) Combined oral contraceptives (COCs). 2) Combined injectable contraceptives (CICs).

3) Vaginal ring.

Contraceptive options for special groups

Women aged > 35 years:

These women are at risk of ↑↑ incidence of atherosclerosis, cardiovascular disorders & oncogenic activity.

A) Physiological methods: Can be used safely but have high failure rate.

B) Barrier methods: Can be used safely but have high failure rate.

C) Combined hormonal contraceptives: Relatively contraindicated.

D) Progesterone only contraceptives: Can be used.

E) IUCD: Good choice.

F) Female sterilization: Excellent method for woman completed her family & women è contraindication to pregnancy.

Contraceptive options for special groups

Recently married couple

-***If female is < 20 years: It is better to postpone pregnancy. If female is > 20 years: Advice her that it is better to get pregnant.***

- Some advice never to give any contraceptive method for recently married couple except after being sure that they are fertile.

-If couple insists on contraception, method must be:

1) Reversible & doesn't affect return of fertility. 2) Safe & free of side effects or complications.3) Doesn't affect sexual relationship.

Contraceptive options for special groups

Recently married couple (continued)

A) Physiological methods: Can be used safely but affect sexual relationship.

B) Barrier methods: Can be used safely but affect sexual relationship.

C) Combined hormonal contraceptives: The best choice.

D) Progesterone only contraceptives: Relatively contraindicated due to:

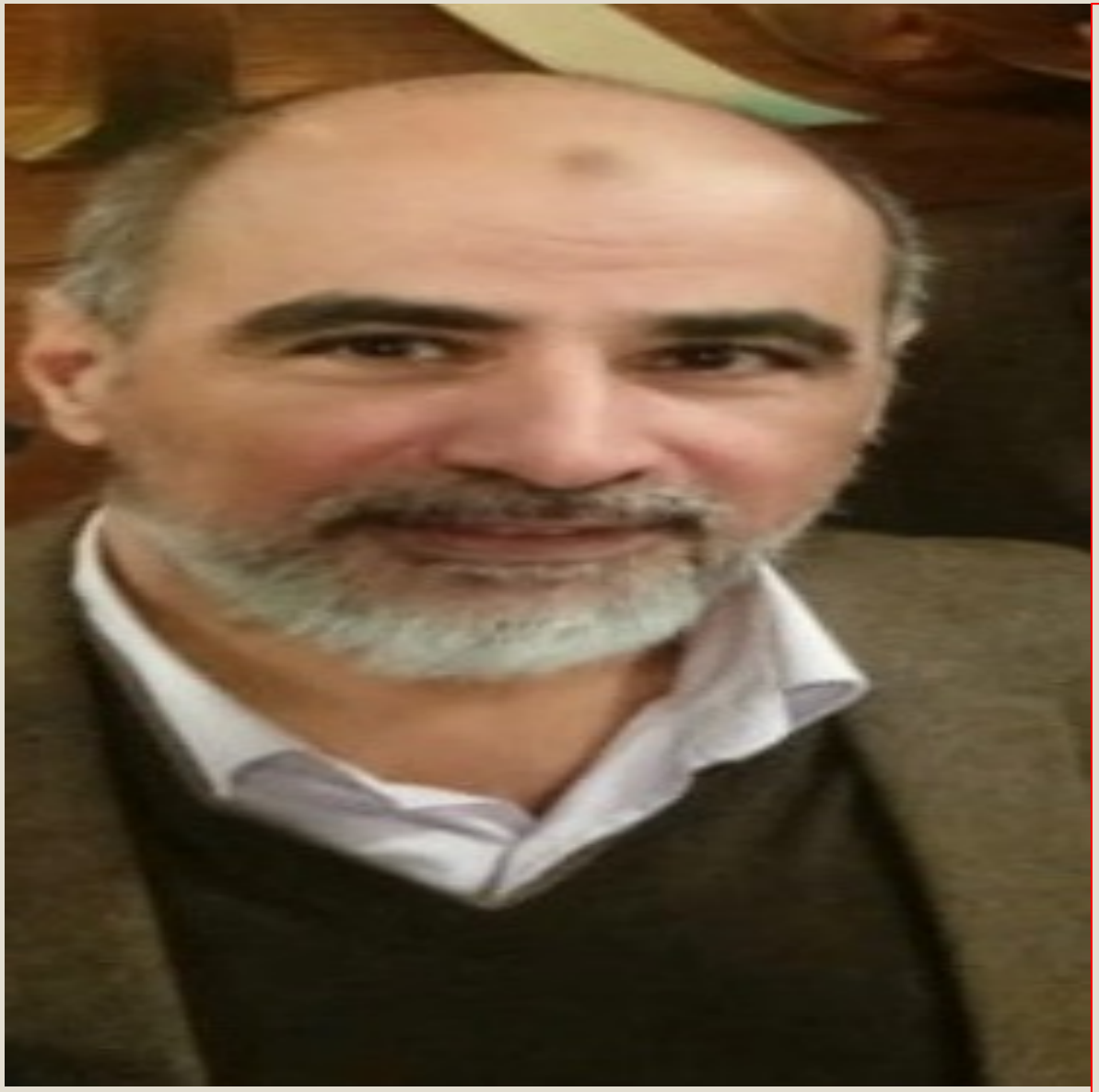
1) Delayed return of fertility. 2) ↑↑ incidence of menstrual disturbances.

E) IUCD: **Contraindicated** due to:

1) ↑↑ incidence of PID → infertility. 2) Difficult insertion in cervix of nullipara.

3) Small sized uterus → more pain & menstrual irregularity.

Osama M Warda
Professor of Obs/Gyn



THAK YOU