CONTRACEPTIONS

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# of Original Slides: 97

Edited by Abdullah Halaweh

Contraception

nothing Important

-Used as voluntary control of fertility
-family planning
-birth control

Choice of contraception:
- efficacy, safety, non contraceptive benefits , cost and personal consideration

Ideal contraception

nothing Important

- Highly effective
- No side effects or risks
- Cheap
- Independent of intercourse and requires no regular action on the part of the user
- Non-contraceptive benefits
- Acceptable to all cultures and religions
- Easily disributed and administrated by non-healthcare personnel

Ideal contraception

nothing Important

- 100% effective
- Completely reversible
- Absolutely free of side effect

Failure rates

- Efficacy is variable.
- Depends on two factors:

How it works

How easy its to use

Failure rate is variable, user failure

COC the effectiveness is high due to inhibition of ovulation(forget pills) [efficitivness decreases with missed pills]

IUS and implanon: very effective , require the user to remember anything

Intra-uterine device (system)

Efficacy

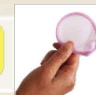
- Long term evaluation of a group of sexually active women using a particular method for specified period to observe how frequently pregnancy occur
- A pregnancy rate per 100 women per year
- Pearl formula
- Number of pregnancies / total number of months contributed by all couples x 1,200

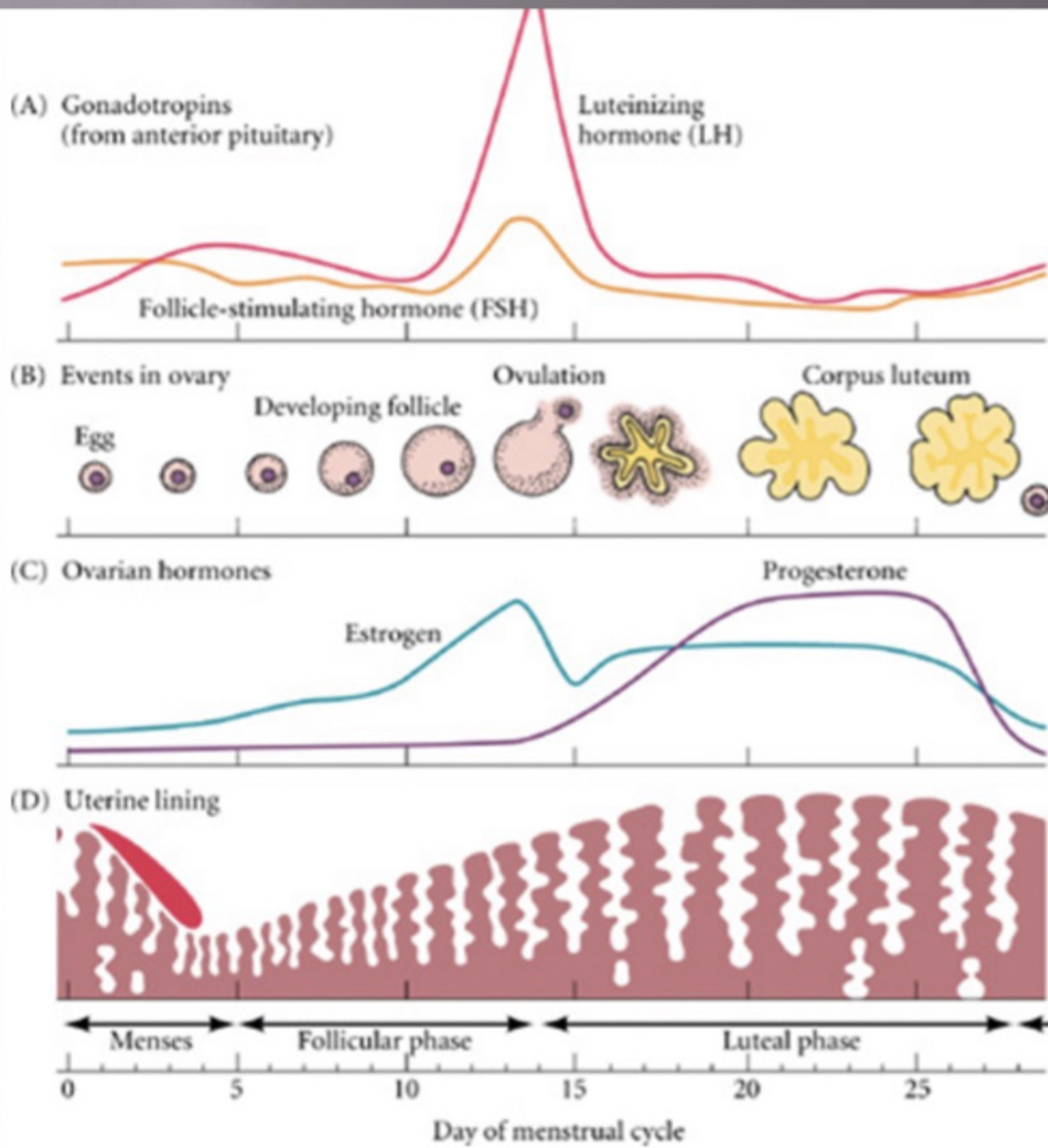
The Pearl formula is a way to measure the efficacy of contraceptives and other birth control methods. It estimates the effectiveness by calculating the number of pregnancies that occur while using a specific method over a given period of time. Here's a breakdown of the formula:

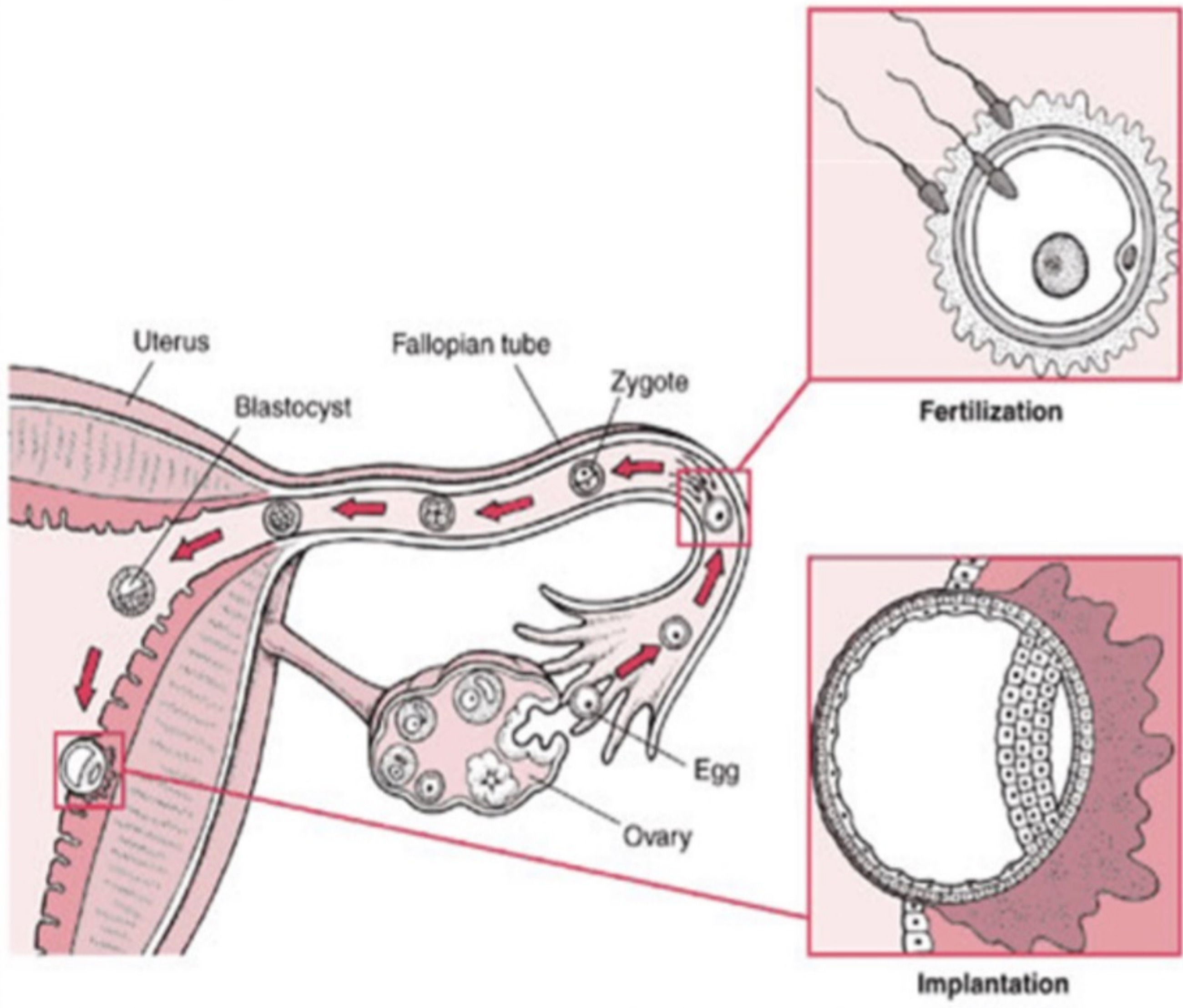
1. **Number of pregnancies:** This is the total number of pregnancies that occurred while using the contraceptive method being studied.
2. **Total number of months contributed by all couples:** This is the sum of all the months that the contraceptive method was used by all individuals or couples in the study.
3. **Multiply by 1,200:** This is a standard multiplier used in the Pearl formula to convert the data into a measure of pregnancies per 100 woman-years of exposure.

Effectiveness of contraceptive methods

Method of Contraception	FR per 100 woman years
COC	0.1-1
POP	1-3
Depo-Provera	0.1-2
Implanon	0.1
Cupper IUCD	1-2
Mirena	0.5
Male Condom	2-5
Diaphragm	1-15
Natural family planning	2-3
Vasectomy	0.02
Female sterilization	0.13




(A) Gonadotropins
(from anterior pituitary)
Luteinizing
hormone (LH)
Follicle-stimulating hormone (FSH)
(B) Events in ovary
Ovulation
Corpus luteum
Developing follicle
Egg
(C) Ovarian hormones
Progesterone
Estrogen
(D) Uterine lining
Menses
Follicular phase
Luteal phase
0
5
10
15
20
25
Day of menstrual cycle



Uterus
Fallopian tube
Zygote
Blastocyst
Egg
Ovary
Fertilization
Implantation

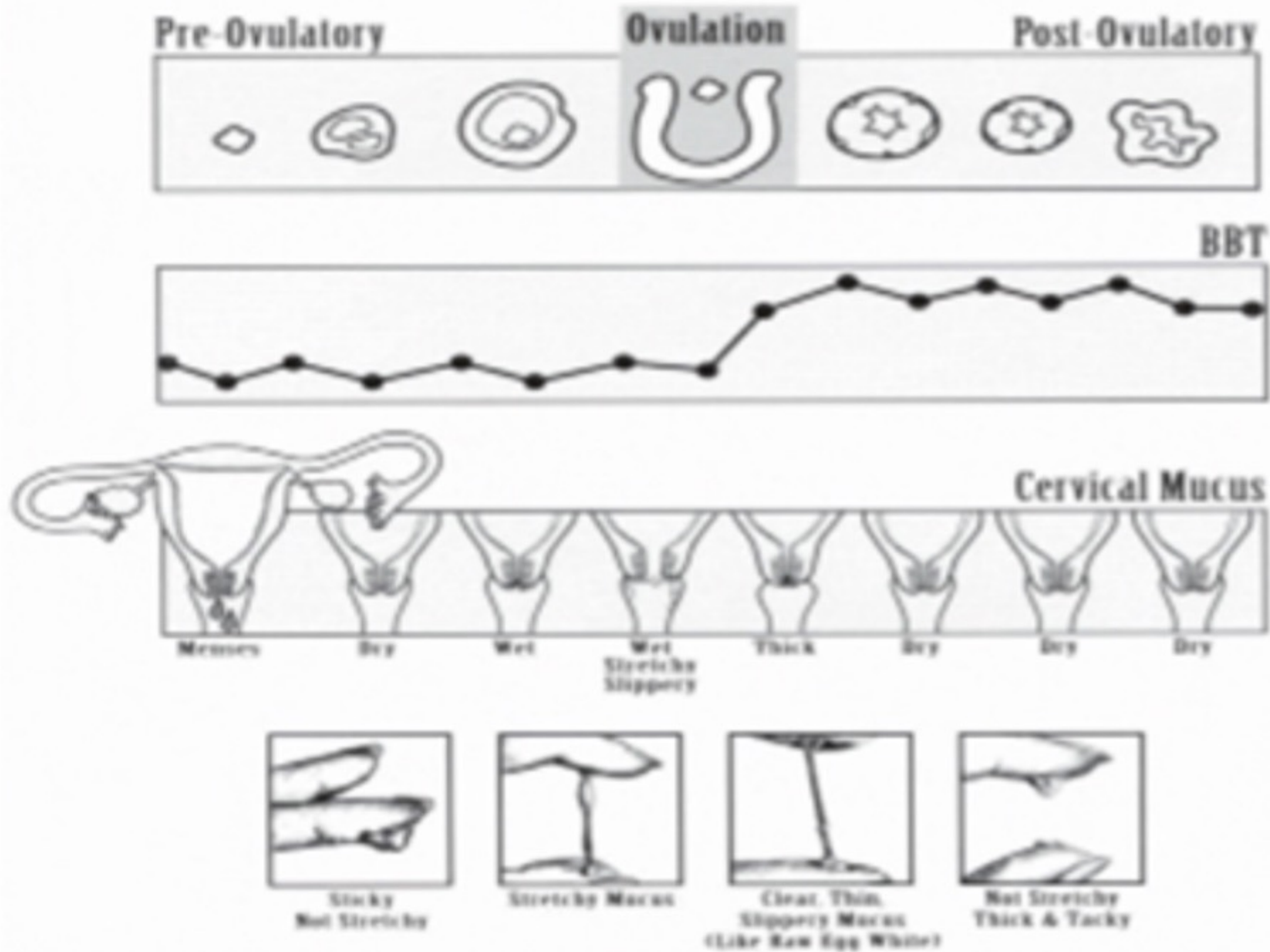


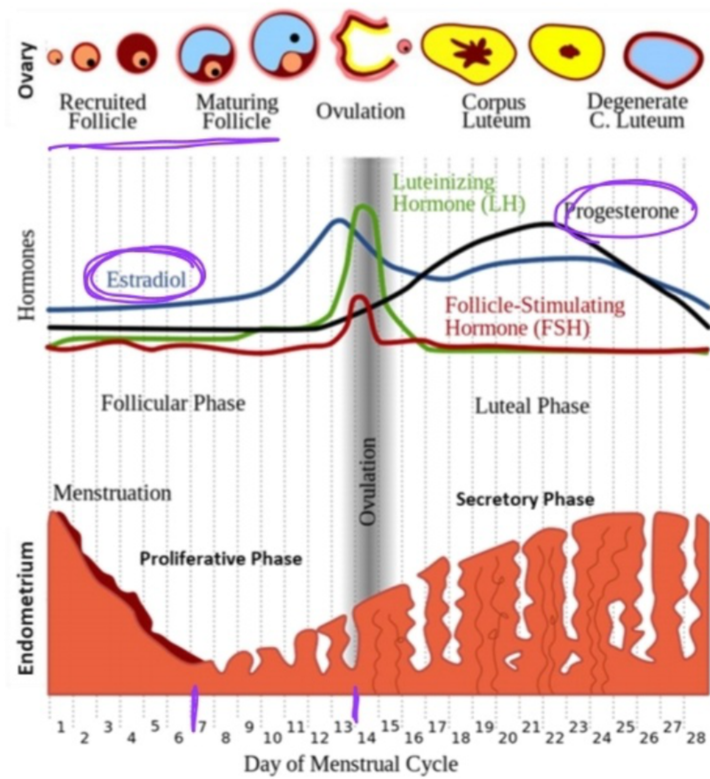
Figure 2

explain for menstrual cycle (BNB) ↓↓

Menstrual Cycle

Basic Principles

- Series changes in ovaries and endometrium
- **Ovarian phases**
  - Follicular (growth of follicles)
  - Ovulation
  - Luteal (preparation for pregnancy)
- **Endometrial phases**
  - Proliferative
  - Secretory



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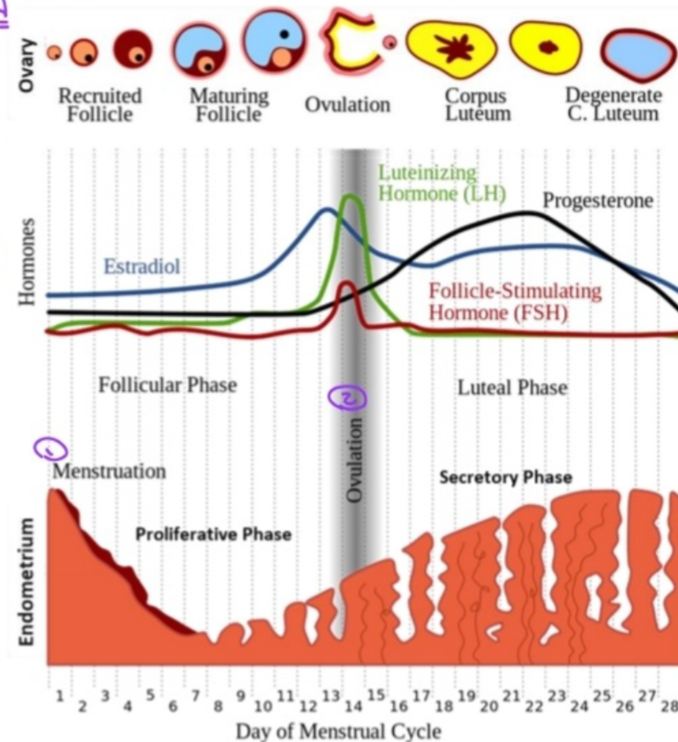
Menstrual Cycle

Follicular and proliferative phases

From menstruation ① tell ovulation ② which triggered by ↑LH

- Menstruation through LH surge and ovulation
- Slowly rising estradiol levels
- Dominant follicle oocyte released at ovulation
- Varies in length: 10-14 days
- Uterine proliferation
- Endometrial thickness increases (> 10x)
- Growth of glands, stroma, blood vessels

"estrogen produced by maturating follicle"



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Menstrual Cycle

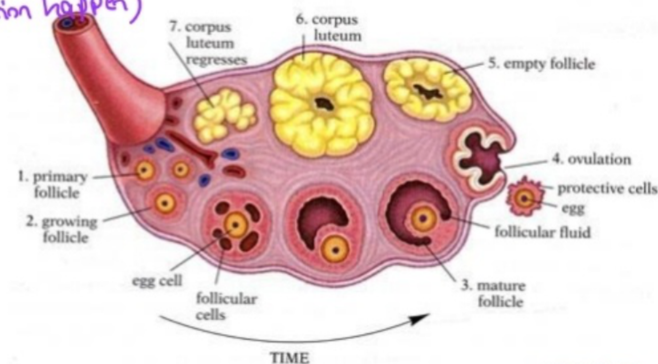
Ovulation

- **Mid-cycle surge** (by LH↑relased from pitutary)
  - Estradiol triggers → **LH surge** (↑ frequency GnRH pulses)
  - Oocyte released from follicle ~ 36 hours after LH surge
  - Basis for ovulation testing: urine detection of LH → when it's High it mean woman has done or near ovulation & here she is Fertile & can give baby
- **Mittelschmerz** (not happen in all woman)
  - Mid-cycle mild, unilateral pain
  - Due to enlargement of follicle or follicular rupture with bleeding
  - Usually resolves in hours to days
  - Can mimic other disorders (appendicitis)

Menstrual Cycle

Luteal and secretory phases

- **Corpus luteum** forms
- Temporary endocrine gland formed from follicle
- Produces large amounts of **progesterone**
- Progesterone inhibits proliferation of endometrium
- Numerous secretions released to prepare for embryo
- Eventually corpus luteum degrades (If no fertilization happen)
- ↓ progesterone → menstruation
- Occurs 14 days after ovulation



Menstruation

- Progesterone levels fall
- Vasoconstriction of spiral arteries
- Collapse and desquamation of endometrium

not Important

Contraception consultation

1. Contraindication
2. Non-Conraceptive health benefits
3. Mode of action
4. Effectiveness
5. Side effects and risk
6. Benefits
7. How to use the the method
8. Emergencies

not important

Contraception

- - Coitus interruptus
- - Natural methods
- --LAM
- -Barrier methods
- -Intrauterine contraceptive device
- -Combined contraception
- -Progestogen –only contraception
- -Emergency contraception
- -Sterilization

Coitus interruptus

The penis is removed from the vagina before ejaculation

Failure rate is high 4-9%

- Advantages:

-immediate availability

-No devices

-No cost

-No chemical involvement

-Reduced risk of transmission of sexually transmitted disease

- Disadvantages:
- high failure rate

↑prolactin → supress GNRH → ↓LH/FSH

2 Lactational amenorrhoea

- Breast feeding delays the resumption of fertility(elevated prolactin and reduction in Gonadotropin releasing hormone)

This will lead to reduction in LH release and inhibit follicular development

- 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 modern methods of contraception may be expensive

LAM

- Advantages:

Involution of the uterus

Menses are suppressed

Postpartum wight loss

- Disadvantages:

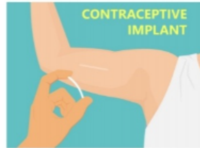
Return to fertility is uncertain

Frequent breast feeding may be inconvenient

Postpartum Contraception

[postpartum
- estrogen → x
- progesteron → ✓]

- Lactational amenorrhea may occur but unreliable
- Barrier methods can be used
- Estrogen avoided for at least 1 month postpartum
  - Increased risk of thromboembolism
  - Decrease breast milk production
- Common options: IUD or progestin implant
  - Copper IUD may cause bleeding: avoided if ongoing bleeding or anemia
  - LNG IUD may be used but some risk of expulsion
  - Progestin implant often used (more reliable than pills)



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3 Natural method

Periodic abstinence

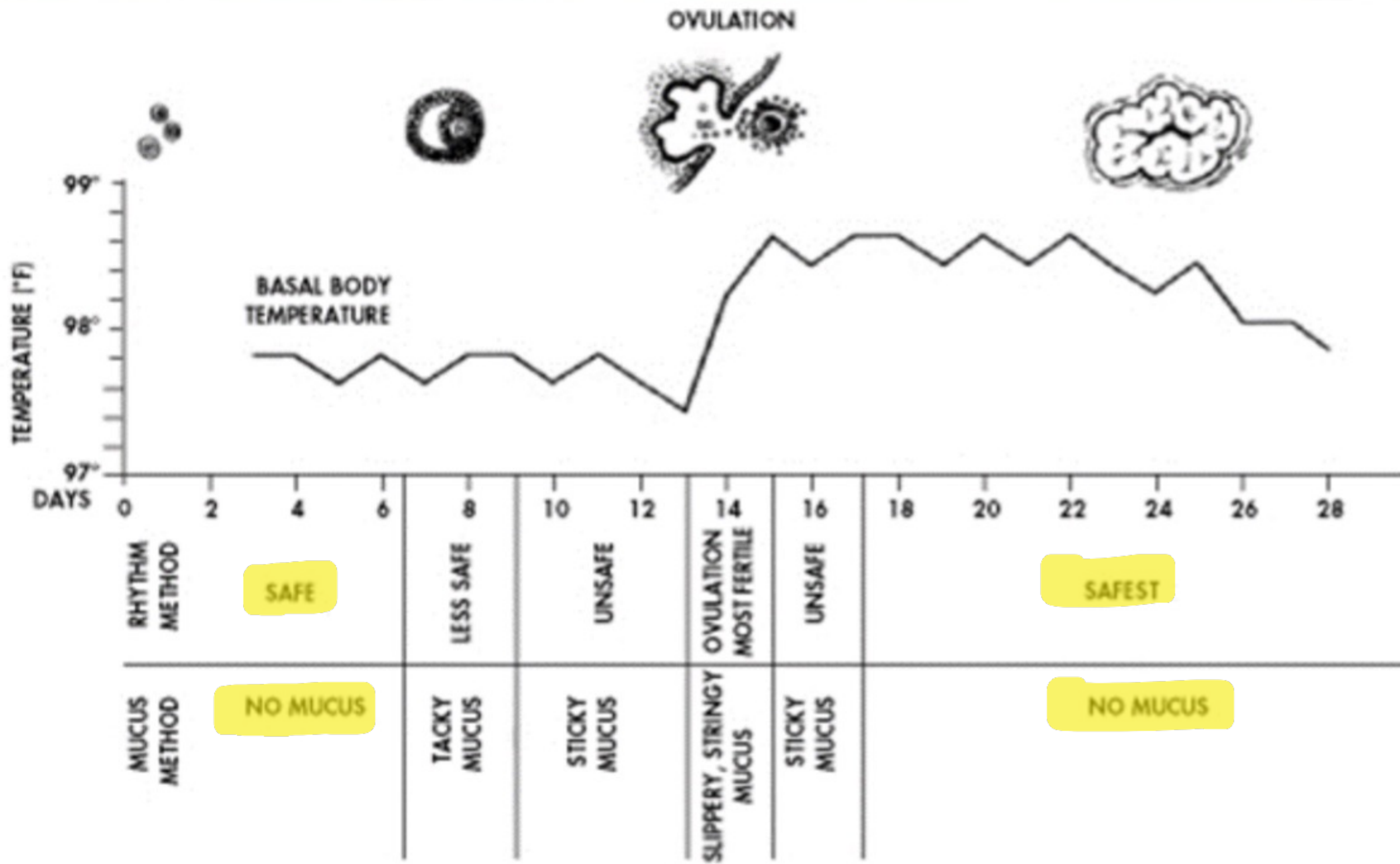
Conception can occur in certain days of the cycle

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

FR. 25%



OVULATION
99°
98°
97°
TEMPERATURE (°F)
BASAL BODY TEMPERATURE
DAYS
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
RHYTHM METHOD
SAFE
LESS SAFE
UNSAFE
OVULATION MOST FERTILE
UNSAFE
SAFEST
MUCUS METHOD
NO MUCUS
TACKY MUCUS
STICKY MUCUS
SLIPPERY, STRINGY MUCUS
STICKY MUCUS
NO MUCUS

❖ Advantages:

-No adverse effects from hormones

-Immediate return to infertility after cessation of use

❖ Disadvantages:

-Only suitable for women with regular period

-Complete abstinence is necessary

-Discipline → تأديب يقصد بها امرأت هب كبح الزوج

-High FR

-The method does not provide protection against STDs

explain down

A) Basal Body Temperature (BBT) Method

- **How It Works:** This method involves taking your body temperature every morning before getting out of bed. A slight increase in temperature typically indicates ovulation.
- **Steps:**
  1. Take your temperature at the same time every morning before getting out of bed.
  2. Record your temperature on a chart.
  3. Look for a pattern of a slight temperature increase, indicating ovulation has occurred.
  4. Avoid unprotected sex during the days leading up to and immediately after the temperature increase.
- **Effectiveness:** About 76-88% effective. Requires consistency and can be influenced by various factors like illness or lack of sleep.

B) Cervical Mucus Method (Billings Method)

- **How It Works:** This method involves monitoring changes in cervical mucus throughout the menstrual cycle. Fertile mucus is clear and stretchy, indicating ovulation.
- **Steps:**
  1. Observe and record the characteristics of your cervical mucus daily.
  2. Identify the fertile mucus (clear, slippery) and infertile mucus (sticky, opaque).
  3. Avoid unprotected sex on the days with fertile mucus.
- **Effectiveness:** About 76-88% effective. Requires careful observation and may be affected by vaginal infections or medications.

c) Calender method

The Calendar Method relies on the idea that ovulation occurs around the middle of the menstrual cycle. To use this method:

1. **Track Your Menstrual Cycle:**
   - Record the length of your menstrual cycle for several months (ideally 6-12 months) to identify its typical pattern.
   - The cycle length is counted from the first day of your period to the day before your next period starts.
2. **Determine Your Fertile Window:**
   - Ovulation typically occurs about 14 days before the start of your next period. Therefore, if you know the length of your cycle, you can estimate when ovulation occurs by subtracting 14 days from the total length of your cycle.
3. **Calculate Your Fertile Days:**
   - For a typical 28-day cycle, ovulation usually occurs around day 14. Thus, you would avoid unprotected sex from around day 10 to day 17 of your cycle, as sperm can live for up to 5 days, and the egg is viable for about . nours after ovulation.

Example Calculation:

1. **Track Your Cycle:** Suppose your menstrual cycle is consistently 30 days long.
2. **Subtract 14 Days:** 30 - 14 = Day 16.
   - This suggests ovulation occurs around Day 16 of your cycle.
3. **Identify Fertile Window:** To account for the lifespan of sperm and the egg, you would consider Days 12 to 17 as your fertile window.

In the example of a 30-day cycle where ovulation is estimated to occur around Day 16, the "safe period" to avoid unprotected sex would be:

- **Before Day 12:** Sperm can survive in the reproductive tract for up to 5 days, so having unprotected sex up to 5 days before ovulation (around Day 12) could result in pregnancy if ovulation occurs earlier than expected.
- **After Day 17:** The egg is viable for about 24 hours after ovulation. Therefore, the period immediately after Day 17 is generally considered to be outside the fertile window, assuming you have a regular cycle and ovulation happens around Day 16.

Summary of Safe Periods:

- **Unprotected Sex Avoided From:** Day 10 to Day 17 (considering the variability in ovulation timing and sperm lifespan).
- **Safe Period:** Generally, it would be before Day 10 and after Day 17.

4 Barrier methods

Physically interrupting the progress of sperm in the female reproductive tract

- Male:

Condoms

- Females:

- Female condoms
- Diaphragm
- Cervical caps
- Spermicidal agents

A-)

Condoms

-Consists of a thin sheath placed over the glans and the shaft of the penis

-One of the most popular mechanical barriers

-Accessible, inexpensive

-3-23 per HWY

Advantages:

-Readily available

-Protects against the STD(HIV) and carcinoma and premalignant disease of the cervix.

B-)

Female condom

Prevent pregnancy by acting as a barrier to the passage of semen into the vagina

Lines the vagina

One size, single use and expensive

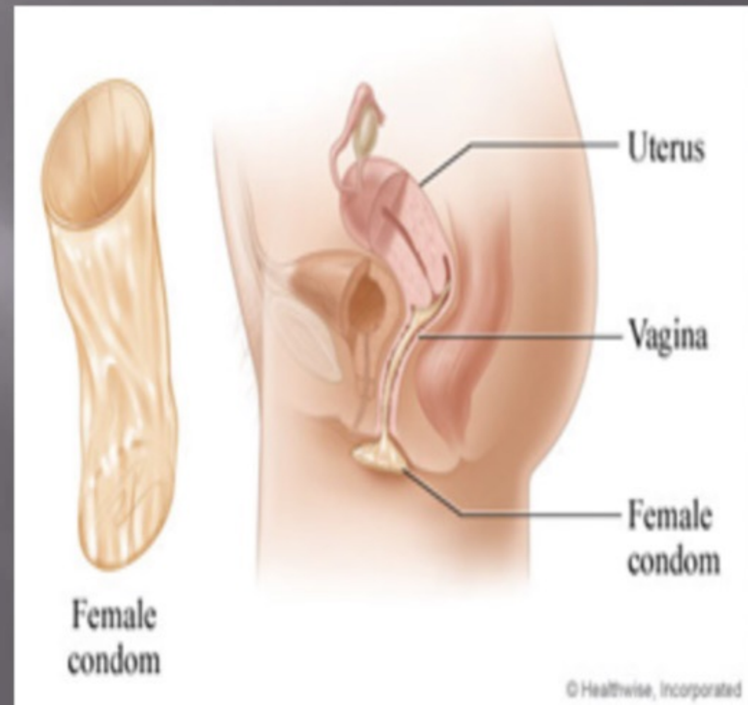
Disadvantages

-The lubricant does not contains spermicide

-Difficult to place in the vagina

-Urinary tract infection

5-21 per HWY



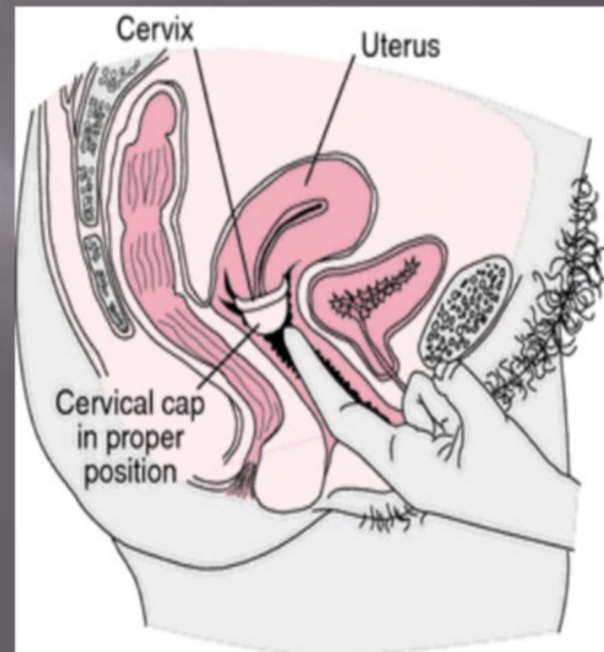
c-) Caps (8h 48h)

Cap: silicone rubber

Cup shaped latex device that fits over the base of the cervix

-it is inserted as long as 8 hours before the coitus and can be left in place for 48 hours

Mechanism: it acts as both a mechanical barrier and chemical barrier



Caps

FR 9-40 %

Advantages:

Easier to fit and Less likely to slip

Reduced risk of UTI(less pressure to the surrounding vaginal wall) not like Female condome / or Diaphragm

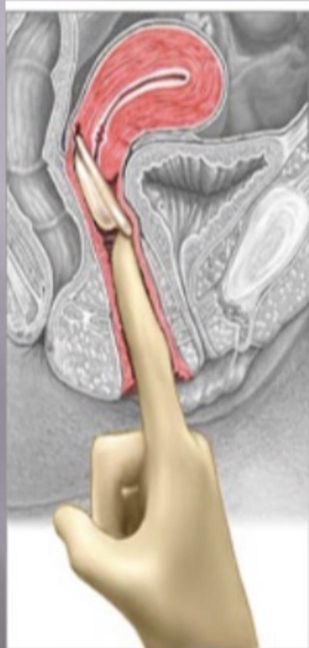
Disadvantages:

-cervical erosions

-Requires training

Diaphragm

- A shallow latex cup with a spring mechannix, in its rim to hold it
- 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
- Should be left for 6 hours after intercourse
- Latex allergy,recurrent vaginal and UTI

Diaphragm

FR 4-20 per HWY

- Advantages: could be applied by the woman
- Disadvantages:

-UTI

-Vaginal erosions

-Hight failure rate

-Requeires training

-Bad odor

E-) Spermicides

- Vaginal spermicides consist of a base combined of Nonoxynol 9
- Must be inserted into the vagina prior to each coital act

Mechanism:

IPrevent sperm from entering the cervical os by attaching the sperm's flagella and body, reducing their mobility and function

FR 6-26%

Spermicides

- For use with female diaphragm and caps, not male condom
- Advantages:

Requires no training

No systemic effect

- Disadvantages:

-Provides minimal protection against STI

-Frequent use of N-9 might increase the risk of HIV transmission

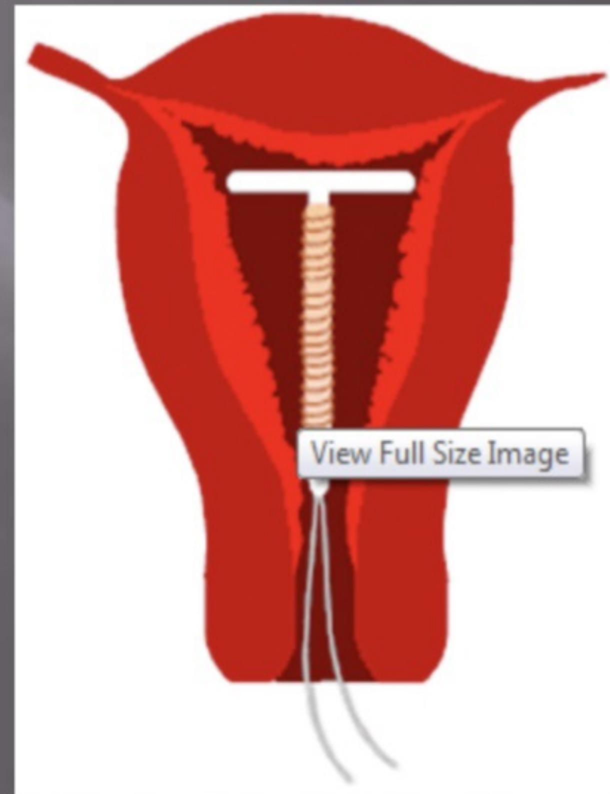
-Vaginal irritation

-Allergic reaction

5

Intrauterine contraception

Most commonly used reversible method of Contraception



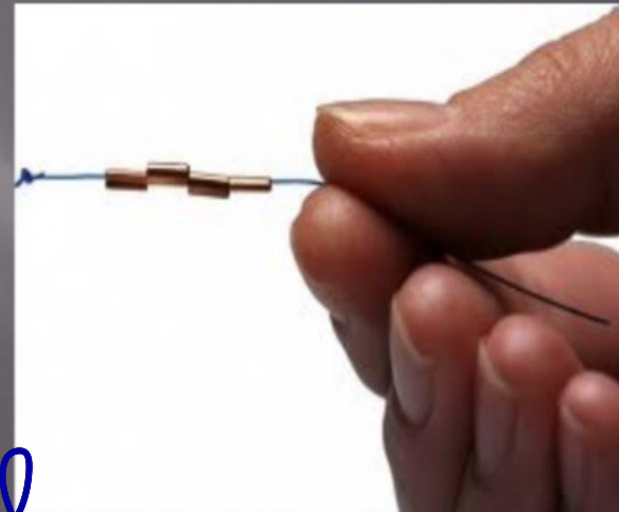
Intrauterine device

1. innert
2. Copper:framed or frameless (gynefix)

Surface area of cupper 300-380 mm2

Prevent fertilization and implantation

→ copper by cause Inflammation In endometrium



IUD

A-) Mirena (levonoregesterol) → relase progesterone

3.Hormone releasing(Mirena) plastic frame with 52 mg levonorgestrel reservoir 20 microgram per 24 hours over 5 years

1) Atrophy of the endometrium →implantation

2) Thickening of cervical mucus

Intrauterine Devices

- Long-acting *reversible* contraception
- Low failure rate similar to permanent sterilization
- Two major types
  - Copper IUD
  - Levonorgestrel (LNG) IUD

Copper IUD

- Copper → inflammatory response in endometrium
- Impairs sperm migration/viability and implantation
- Heavier and more painful **menstrual bleeding**
- Especially first 6 months
- Commonly leads to patient request for removal
- Marketed as hormone free IUD
- Last up to 10 years

* all of these due Inflammatory Response In endometrium

Copper IUD

Levonorgestrel IUD

- Polyethylene frame with LNG (progestin)
- Thickens cervical mucus as barrier and impairs implantation
- Last up to 7 or 8 years
- Causes amenorrhea and **improves abnormal uterine bleeding**
- Good option in women with heavy menses
- Safest and most effective form of contraception

as progesterone stabilize the endometrium so no bleeding or menstruation

https://chatgpt.com/share/3feb3cb1-d4ad-49df-8e35-8981b77aab08

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- Mechanism of action

-Marked inflammatory rx

--Toxic for sperm ,ovum and interfere with sperm transport

-Endometrial suppression and cervical mucus effect

-FR less than 1% for cupper

0.6 % for Mirena

IUCD

- Advantages:

- No adverse systemic effect
- Ectopic pregnancies are reduced, however, the ratio of extrauterine to intrauterine pregnancy is increased if conception does occur

- Menstrual blood loss and dysmenorrhea are decreased with Mirena

↳ due: ① as progesterone stabilize the endometrium so no bleeding or menstruation

② and menstruation to happen it need withdrawl of progesterone

IUCD

- **Disadvantages:**

- Risk of uterine perforation
- Increase dysmenorrhea and menorrhagia with cupper
- Increased mestural blood loww occurs in first few cycles
- IUCS might be expelled unnoticed
- No protection against STDS

Intrauterine Devices

Complications

- Irregular bleeding or cramping
  - Usually resolves over first few months
  - Does not indicate decreased efficacy
- Altered menstrual periods
  - Copper IUD: heavier periods with stronger cramping
  - LNG IUD: amenorrhea or irregular periods

هاي منا اللي خلي بعض الستات تو قف هاي الطريقة

Intrauterine Devices

Complications

- Rare complication: **uterine perforation**
  - Often asymptomatic and found when IUD string not felt
  - Rarely leads to pelvic pain with excessive cervical bleeding
- If failure occurs: ↑ risk of **ectopic pregnancy**

Contraindication of IUCD

- History of malignant trophoblastic disease
- Endometrial cancer (due to Hormone relased)
- Pelvic TB
- Current STI or pelvic inflammatory disease
- Unexplained vaginal bleeding should be investigated
- Distorted cavity : may make insertion difficult
- Cupper allergy
- Endomterial and cervical cancer
- History of ectopic pregnancy
- Suspected pregnancy (↑ Miscarage)

Intrauterine Devices

Contraindications

- Anatomic uterine abnormalities
  - Bicornuate uterus
  - Leiomyoma (fibroids)
  - Sometimes IUD can be placed with US guidance
- Unexplained uterine bleeding
- Pregnancy or pelvic infection
- Endometrial or cervical cancer
- LNG IUD:
  - History of PR+ breast cancer
  - Active liver disease

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

* Added → In first 7 day of cycle
* removal → during Menstruation

complications

Lost thread

-Drawn up in the cervical canal

-Expelled

Spontaneous expulsion is common in first year, during menstruation, risk is 1 in 20

-Migrated outside the uterus(unrecognized perforation)

Ultrasound

X ray

6 Hormonal contraceptive methods

-Combined contraception

-Progestrone

Combined contraception

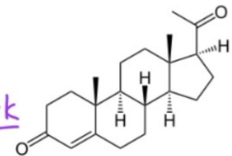
- Combined oral pills
- Patch
- Injectable
- Vaginal ring

Hormonal Contraceptives

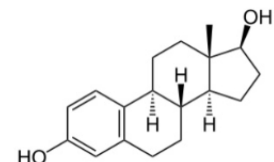
- **Progestins**
  - Thickens cervical mucous — This How leveno IUD work
  - Thins endometrium to prevent implantation
  - High dose blocks LH surge → absence of ovulation
- **Estrogens**
  - Suppress FSH release
  - Limits follicular maturation
  - Increases effects of progestins
  - Main benefit: stabilizes endometrium
  - **Less breakthrough bleeding**

Less Breakthrough Bleeding:

- By stabilizing the endometrium, estrogens help reduce the incidence of breakthrough bleeding.
- Breakthrough bleeding is unscheduled bleeding that can occur between menstrual periods, often seen with hormonal contraceptive use.



Progesterone



Estradiol

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Combined hormonal contraception(CC)

- Oestrogen : ethynil estradiol
- progesteron:

Second generation(nortestosterone and levonorgestrel)

Third generation(desogestrel and gestodene)

Fourth generation – antiandrogenic(drospirenone,dienogest

- FR 0.3%

Combined contraception

- Advantages

-Treatment of menstrual irregularities

-Treatment of menorrhagia

غزارة الطمث

-PID

-Ovarian cyst

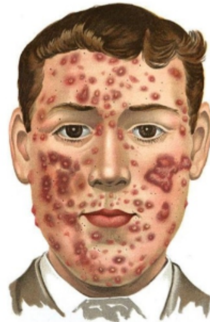
-Ectopic pregnancy is prevented

-Protection against ovarian cancer

Combination Oral Contraceptives

Non-contraceptive benefits

- Decreased risk of ovarian and endometrial cancer
- Menses more predictable and lighter
- Improves acne



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Combined contraception

- **Disadvantages:**

-Nausea

-Breat tenderness

-Breakthrough vagianl bleeding (mainly if has estrogen content)

-Amenorrhea (due progesterone)

-No protection STDs

-Hypertension

-Hepatocellular adenoma

-Atherogensis and stroke

-Cervical cancer (protection against ovarian cancer Risk of cervical cancer)

Combination Oral Contraceptives

Adverse Effects

- Most common: nausea and headache
- **Breakthrough bleeding**
  - More frequent if low estrogen component
  - Does not indicated decreased efficacy
  - Usually resolves spontaneously
- Hypertension (usually mild)
- **Thrombosis**
  - Estrogen increases clotting factors
  - Usually venous thrombosis: DVT/PE
  - Rarely arterial thrombosis: stroke/MI

(mainly venous)

Risks of CC

- Cardiovascular effects (due estrogen ↑ LDL ↓ HDL)
- 3-4 fold increase of VTE in CC users (venous Disease)
- Unaffected by age, smoking, or duration fo use
- Higher in obese women and history of PIH pregnancy induced HTN
- Third generation associated with two fold increase in risk of VTE
- Risk is greatest during the first year of use
- To unmasking of inherited thrombophilias

CC risks

Ischemic strock

- Arterial disease less common, more serious
- Related to age and smoking
- Increase for second not third generation

venous only with 3 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

CC risks

Malignant disease

- Breast cancer: small increase in risk

mainly If PR(+), ES(+)

- 10 years after stopping the pills

Ovarian and endometrial 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

The use of combined hormonal contraceptives (CHCs), which include combined oral contraceptives (COCs), patches, and rings, has been associated with both reduced and increased risks of certain types of cancer.

1. **Endometrial Cancer**: Research shows that using CHCs can decrease the risk of endometrial cancer. This protective effect appears to persist for several years even after discontinuing CHCs. The longer someone uses CHCs, the more pronounced the protective effect against endometrial cancer.
2. **Ovarian Cancer:** Similar to endometrial cancer, CHCs also lower the risk of ovarian cancer. This reduced risk can continue for several years after stopping the contraceptives. The protective effect is thought to be related to the suppression of ovulation, which decreases the number of times the ovaries are exposed to potentially carcinogenic conditions.

risks

Cancer of cervix: increased risk (greater sexual activity)

Recent meta analysis: patients with persistent infection with HPV more than 5 years had increased relative risk of 2.8

More than 10 years, 4.

Trophoblast disease : no data

so: * endometrial cancer : protective
* ovarian cancer : protective
x cervical cancer : ↑Risk

Absolute contraindication of CC

- ① Breastfeeding < 6 weeks
- ② Smoking , age > 35 y/o & > 15 cigarettes per day
- ③ Multiple risk factors for cadirovascular disease
  - ↳ IHD, Stroke, thrombosis
- ④ Hypertension: 160/100
- ⑤ Hypertension with vascular disease
- ⑥ Current or history of deep vein thrombosis
- ⑦ Major surgery with prolonged hospitalization
- ⑧ Migrain with aura

Combination Oral Contraceptives

Estrogen contraindications

- **Smokers > 35 years of age** {Risk of DVT}
- History of DVT, PE, stroke or MI
- Breast cancer
- Hepatocellular adenoma
- Cirrhosis
- Migraine with aura
- Hypertension
  - CDC: systolic ≥ 140 mmHg or diastolic ≥ 90 mmHg
  - WHO: systolic ≥ 160 mmHg or diastolic ≥ 100 mmHg

COC

Mechanism of action

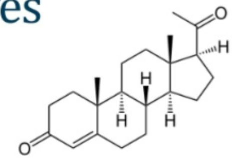
Inhibition of ovulation

Inhibit FSH , suppress the follicular development

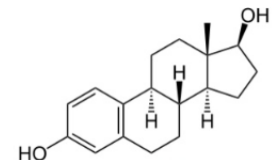
Inhibit LH,prevention of ovulation

Combination Oral Contraceptives

- Combination of **progestin and estrogen**
- Better suppression of follicular growth
  - Progesterone suppresses LH
  - Estrogen suppresses FSH
- Estrogen increases effect of progesterone
- **Less breakthrough bleeding**
  - Estrogen stabilizes endometrium
- Many have 24/4 formulation
  - 24 days of hormone pills
  - 4 days of placebo pills



Progesterone



Estradiol

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Patient management

- Detailed medical and family history
- Blood pressure
- Wighting,Breast and pelvic examination
- Give it for three months then review in 6-12 monthly review
- Clear advice about what to do if they miss any pills
- Drug history

- start in the 1st day of the cycle

Drug interaction

Effectiveness is reduced by anticonvulsants, antifungals , antiretrivirals and antibiotics

- Enzyme inducing agents.
- Induce liver cytochrome P450---→reduce the efficacy
- Higher dose of oestrogen, change the medication

CC increase the clearance of medications

- Lamotrigine →reduce serum level
- Dose should be adjusted

Combined contraception

{Form of "CC"}

- Oral
- Transdermal(contraceptive patch)
- Systemically(combined injectables)
- Vaginal routs(contraceptive vaginal ring)

Oral coc

Two steroids hormones

Estrogen EE 20-50 microgram

Low dose pills (15-35 microgram) , safer

50 microgram strongly linked to increase risk of thrombosis

Estradiol valerate

synthetic progesterone

Second generation(nortestosterone and levonorgestrel)

Third generation(desogestrel and gestodene)

Fourth generation – antiandrogenic(drospirenone,dienogest)

COC

- different profile
- Pills with levonorgestrel is associated with the lowest VTE risk
- Dianette contains antiandrogen , useful for acne treatment

2nd generation

but ↑ risk of arterial

Remember
① venous → by 3
② arterial → by 2.3

COC

- 21 days followed by 7 day break

- Newer brands (24/4,84/7,365)

break

no menstruation

24 → real drug

4day → placepo

Missing pills

- 25% of the pill user will have an ultrasound evidence of follicles of 10 mm during 1st day of cycle
- Start of the pills should be in the first day of the cycle

Start in first day of cycle
(US → 10mm follicle)

Chat GBt

Missing One Pill

1. **Take the Missed Pill:** As soon as you remember, take the missed pill. If it's within 24 hours of your usual time, it should be effective. If it's been longer, just take it as soon as you can.
2. **Continue with Your Pack:** Continue taking the remaining pills in the pack at your usual time.
3. **Contraceptive Protection:** You should remain protected if you missed only one pill and took it as soon as you remembered. No additional contraception is usually needed.

Missing Two or More Pills

In the First Week of Your Pack:

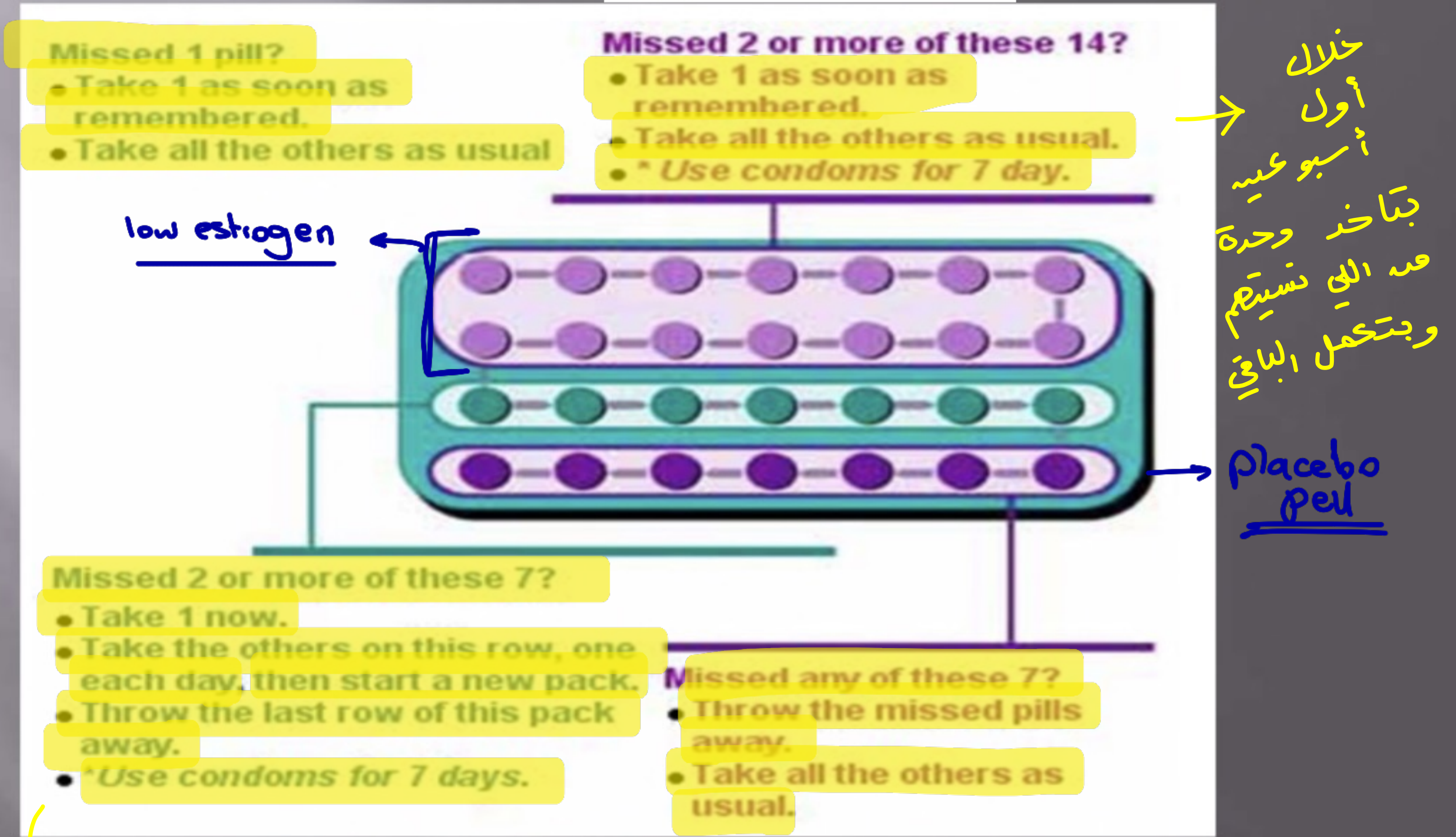
1. **Take the Most Recent Missed Pill:** Take it as soon as you remember. Discard any earlier missed pills.
2. **Continue with Your Pack:** Continue taking the remaining pills in the pack at your usual time.
3. **Additional Contraception:** Use extra contraception (like condoms) for the next 7 days to ensure protection.

In the Second Week of Your Pack:

1. **Take the Most Recent Missed Pill:** Take it as soon as you remember. Discard any earlier missed pills.
2. **Continue with Your Pack:** Continue taking the remaining pills as usual.
3. **Contraceptive Protection:** You should remain protected if you missed two pills in the second week, as long as you took the most recent missed pill correctly and have taken all the following pills correctly.

In the Third Week of Your Pack:

1. **Take the Most Recent Missed Pill:** Take it as soon as you remember. Discard any earlier missed pills.
2. **Skip the Placebo Week:** Start a new pack immediately without a break (skip the placebo week) to ensure you remain protected.
3. **Additional Contraception:** If you miss pills in the third week and do not start a new pack immediately, use additional contraception for the next 7 days.



should not take a break

new pack عاليوم ٢١ عطول جتبدء

Transdermal patch

- Release estrogen and progesterone directly into the skin
- Failure rate 1 in 100
- Advantages:

Greater compliance

-Decreased side effects, nausea and vomiting by avoiding the first pass effect

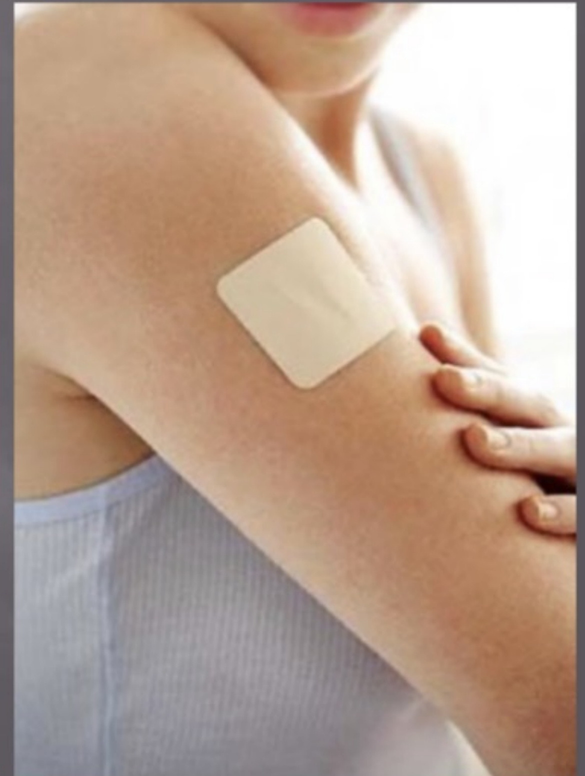
- Disadvantages:

Skin irritation

Similar to OCP

Contraindication :

Similar to OCP



Transdermal patch

- Each patch last for 7 days, three patches / month
- Efficacy might be reduced by overweight

Vaginal ring

NOVARING

- Hormones are absorbed directly by the reproductive organs
- Mechanism of action:

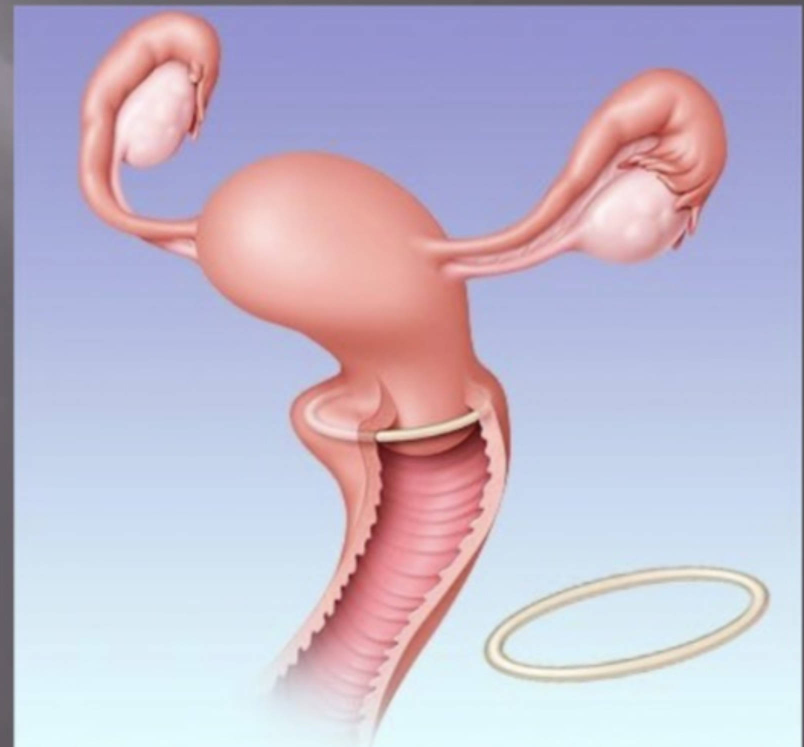
Suppression of gonadotrophins for 3 weeks ↓FSH/LH

- Advantages:

-Highly effective , complete suppression of ovulation

-Easily inserted and removed

-Rapid return to fertility



Vaginal ring

- Disadvantages:

-Headache

-Vaginal irritation

-Slip during intercourse

- Containdications

Same as OCP

- 3 weeks – 7 days ring-free interval

→ SO

1) OCP
2) Transdermal patch
3) vaginal Ring

(All has same contraindication)

PROGESTERONE ONLY CONTACEPTION

Only progesterone

Progesterone only

- Known as minipills
- Candidates include women who are breast feeding and women with contraindications to estrogen use
  - Estrogen avoided for at least 1 month postpartum
    - Increased risk of thromboembolism
    - Decrease breast milk production
- Mechanism
  - Suppression of ovulation by ↓LH
  - Increase cervical mucus viscosity
  - Reduction in the number and sisze of endometrial glands
  - Reduction in the cilia motility in the fallopian tube, slow the rate of ovum trasport

- Many non-contraceptive uses
  - Endometriosis
  - Adenomyosis
  - AUB
  - Fibroids
  - Endometrial hyperplasia

Remember progesteron thin endometrium

1. Berenson et al. *Am J Obstet Gynecol*. 2009;200(3):329

...erone only

protects against:
- endometrial ca
- fibroids
- endometriosis

- advantages

-No effect on VTE

-Minimal impact on lipid profile

-Can be used in most cardiovascular disease except (current severe arterial wall disease)

-Lactating woman

-Protects against endometrial cancer

-Decrease menstrual loss

-Symptomatic relief of dysmenorrhea

-Protect against endometriosis,, uterine myomas

Progesterone only

disadvantages

- -Menstrual disturbances(continuous bleeding, spotting)
- -Amenorrhoea(Injectable)
- -Functional ovarian cysts
- -Ectopic pregnancy → due to relaxation of fallopian tubes
- -Acne,headach,breast tenderess and loss of libido

POP and malignancy

- Malignant disease

Protects against endometrial cancer

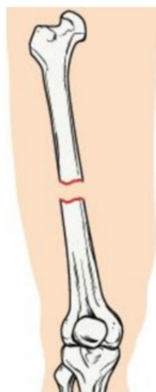
No data about ovarian cancer, cervical cancer

Increase risk of breast cancer ,1.17 %,injectable

*note injectable ↑ Risk of: ① breast cancer ② Amnnerohea

Progestin Only Contraceptives

- All associated with **irregular bleeding**
- Often used in women with estrogen contraindications
- Cannot be used in women with breast cancer
- Depo-Provera associated with ↓ **bone mineral density**
  - Suppression of estrogen production
  - Improves with cessation of contraception
  - Encourage calcium, vitamin D and exercise
  - Routine monitoring of BMD not recommended
- Mood changes (depression) may occur
- Very rare with progesterone IUD



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Types of progesterone contraception

- POP
- Injectable
- Implants
- IUS (Mirena)

- Mini pill (norethindrone)
  - Thickens cervical mucous for 20 hours
  - Must be taken same time every day

Progestogen only pills

- Oral(older age , breast feeding,CVS)
- ① Old generation : thicken the cervical mucus , not inhibit ovulation
- ② new: third generation: desogestrel(Cerazette) : inhibit ovulation by ↓LH
- Same time, no break
- Old generation : delay not more than 3 hours
- New generation:12 hours

main mechanism is cervical thickening

- The efficacy is largely dependent on compliance

الالتزام

- The overall failure rate is 0.3-4 per HWY

- Injection
  - Depo Provera (medroxyprogesterone)
  - Given every 3 months
  - Irregular bleeding
  - May cause weight gain[1]
  - 3 years: + 11 lbs
  - COCs: + 3 lb

injectables

Depo provera

Depomedroxyprogesterone acetate

IM

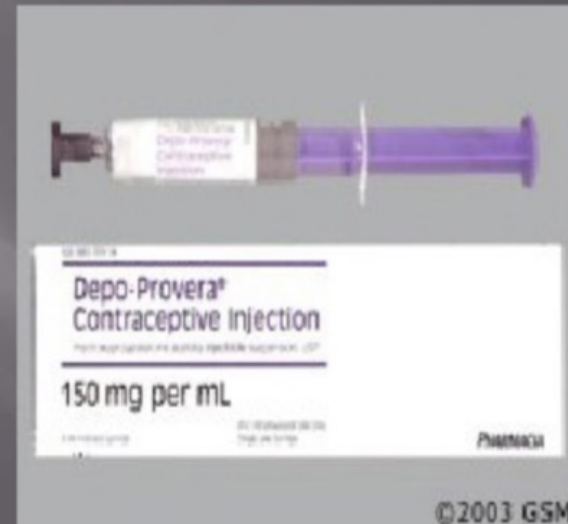
150 mg , 12 weeks

Mechanism of action:

Suppression of LH and FSH

Efficacy

0.3%



Depo provera

- Advantages:

-Reduced risk of ovarian and endometrial cancer

-Safe in breast feeding

-Dysmenorrhea is decreased

-No serious side effects of estrogen

- Disadvantages:

-Amenorrhea in 50%

-Delay in fertility in 50%

-Weight gain

-Depression

-Menstrual irregularities might continue as long as 1 year

-Associated with small reduction of BMD, recovered after discontinuation

↪ Bone Mass Density

- Implant (etonogestrel)
  - Placed in upper arm - 3-year lifespan
  - Rarely used due to irregular bleeding

Subdermal implants

-Norplant: six rod system, not available

-Implanon

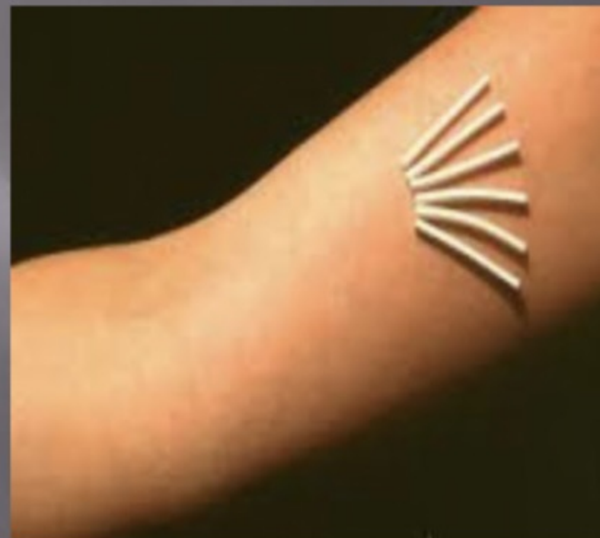
Single rod of 68 mg of etonogestrel

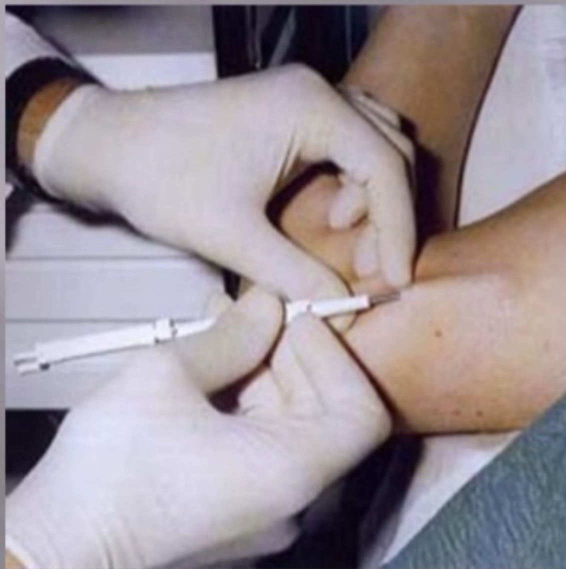
-Triceps of the non dominant arm

-3 years

IMPLANON

NORPLANT



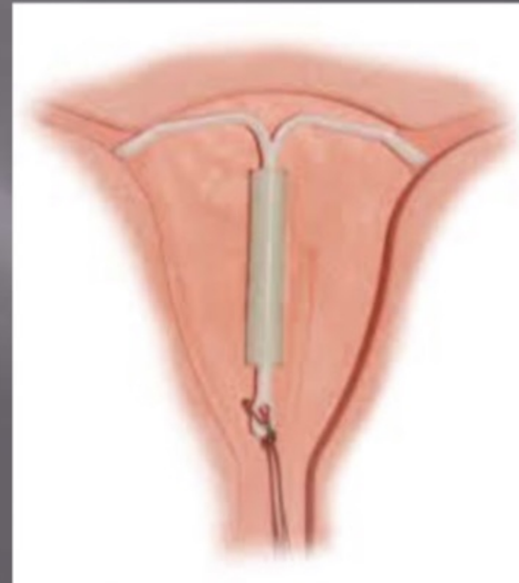


Implants

- Advantages:
  - On exogenous estrogen
  - Prompt return to fertility
  - No effect on breast feeding
- Disadvantages:
  - Minor surgery
  - Difficult removal
  - Headaches
  - Mood changes
  - Acne
  - Galactorrhea ↑ Milk

IUS (talked about)

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



Emergency contraception

- Back –up method
- Reproductive aged women who had unprotected sexual intercourse After unprotected intercourse and before implantation
- After failure of barrier method, missed pills

Emergency contraception

- 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 (levonorgesterol)

* Inhibit and delay ovulation if taken several days before ovulation by ↓LH

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 %

Emergency contraception

Cupper IUCD

The most effective method

Within 5 days of unprotected intercourse

Spemicidal and blastocidal action of cupper

Sterilization

-Elective permanent, irreversible method of contraception

-although both female and male sterilization procedures can be reversed surgically, the surgery is technically more difficult than the original procedure

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 counselling we should discuss the long – acting reversible methods

Female sterilization

Female sterilization: blocking both fallopian tubes

- Occlusion with rings, clips, bands
- segmental destruction with electrocoagulation
- Suture ligation with partial salpingectomy
- Essure system

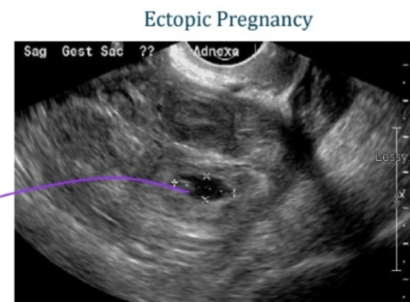
Female Permanent Contraception

Sterilization or Tubal Ligation

- Variety of surgical techniques
- Goal is disruption of fallopian tubes
- Often done postpartum
- Also performed outside pregnancy ("interval")
- Very low failure rate
- Reversible in some cases based on technique
- Long-term risks: **ectopic pregnancy**

adnexal mass

Ectopic Pregnancy



James Heilman, MD/Wikipedia

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Filshie clips

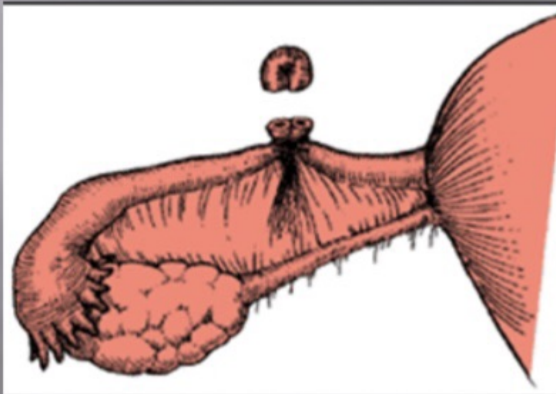
- Filshie clips : commonest
- Right angel to the tube
- 1-2 cm from cornua
- Whole width
- Multiple clips is not nescessary

Pomeroy technique

loop of tube tied and

Excised

laparotomy



Done mostly during C-section

complications

- Anesthesia problems
- Damage to intraabdominal organs
- Need for laparotomy: obese,adhesions

Essure system

not avaliable in jordan

- A new technique
- Does not require surgical incisions and can be performed under local anaesthesia
- Hysteroscopy
- A microinsert is placed directly into the fallopian tubes

Disadvantage:

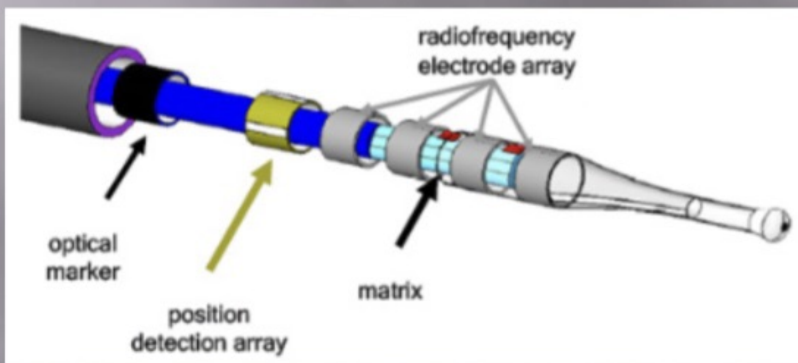
- After the 3 months period , patient must undergo a hysterosalpingogram

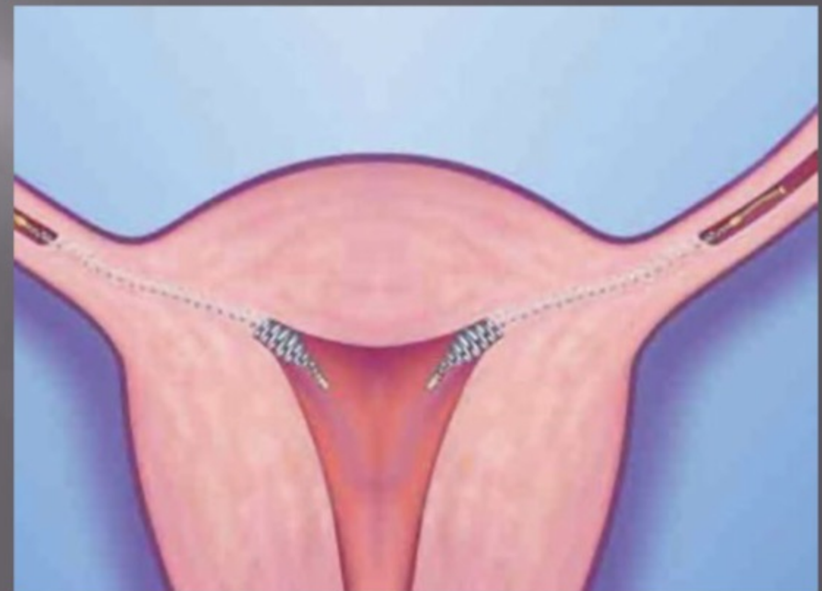
perforation
infection
device migration

Candidates :high BMI,medical illness,previous abdominal and pelvic surgery)

ADIANA

ESSURE





efficacy

- FR.   0.8-3.7 %

advantages

- Does not involve hormones
- Permanent form of contraception
- No effect on libido or menstruation
- Same day procedure

Disadvantages

- General or regional anaesthesia
- Patient might regret her decision
- Essure method requires backup method for 3 months

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

Incision of the scrotal sac , transection of the vas ,

Division or removal of a piece of each vas

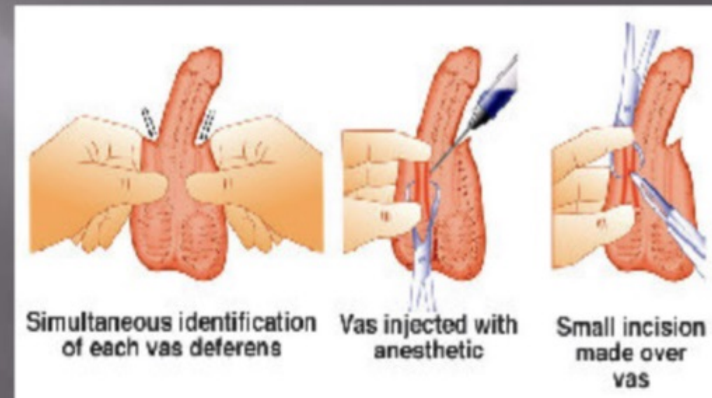
-Cheaper

-Out patient basis

- Local anesthesia

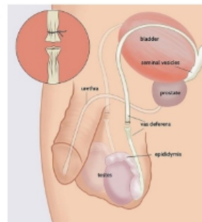
Mechanism:

Vasectomy prevents the passage of sperm into the seminal fluid by blocking the vas



Vasectomy

- Ligation of bilateral **vas deferens**
- Usually outpatient under local anesthesia
- Semen analysis three months postoperatively to confirm sterility
  - If sperm at 3 months → follow-up test 1 to 2 months later
  - Failure if sperm at follow-up after > 20 ejaculations and > 3 months
- Use alternate method of contraception until semen analysis
- Usually permanent
- Rare cases of recanalization (~ 0.2% of patients)
- Reversal possible in some cases



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Male sterilization

Advantages

- No Hormones
- Is permanent
- Outpatient procedure
- Quick
- Carries minical risks with regard to the procedure: the ability to check for efficacy (SFA)

seminal fluid analysis

FR 0.1 %

Male sterilization

Disadvantages

- Hematoma formation
- Sperm granulomas
- After the procedure, remnant sperm in the ejaculatory ducts

Contraception should be continued until there are two consecutive semen analysis of azoospermia.

* First test 8 weeks after the procedure, and the second after 2-4 weeks(20 ejaculations)

Disadvantages

- Patient may regret the decision
- Does not protect against STDs
- Short term discomfort occurs

Vasectomy(complications)

- Scrotal bruising (everyone)
- Haematoma (1-2 %)
- Wound infection (up to 5%)
- Antisperm antibodies (leakage of sperm)
- Chronic testicular pain(unknown cause)
- Granuloma formation(painful)
- ? Atherosclerosis , testicular cancer
- FR (1 in 2000), natural reversal 1 in 4000

Counseling

- Age
- Family size
- Problems of current contraception
- ? Partner
- Stability of the relationship
- FR
- The procedure
- Risks and side effect
- Reversibility

Reversal of sterilization

- Laparotomy, microsurgery, 70% success
- 5% ectopic pregnancy risk due to presence of scar
- Vasectomy

90% success rate

Pregnancy rate 60 % ASA

anti-sperm antibody

Thank you

BNB

* About Hormone :

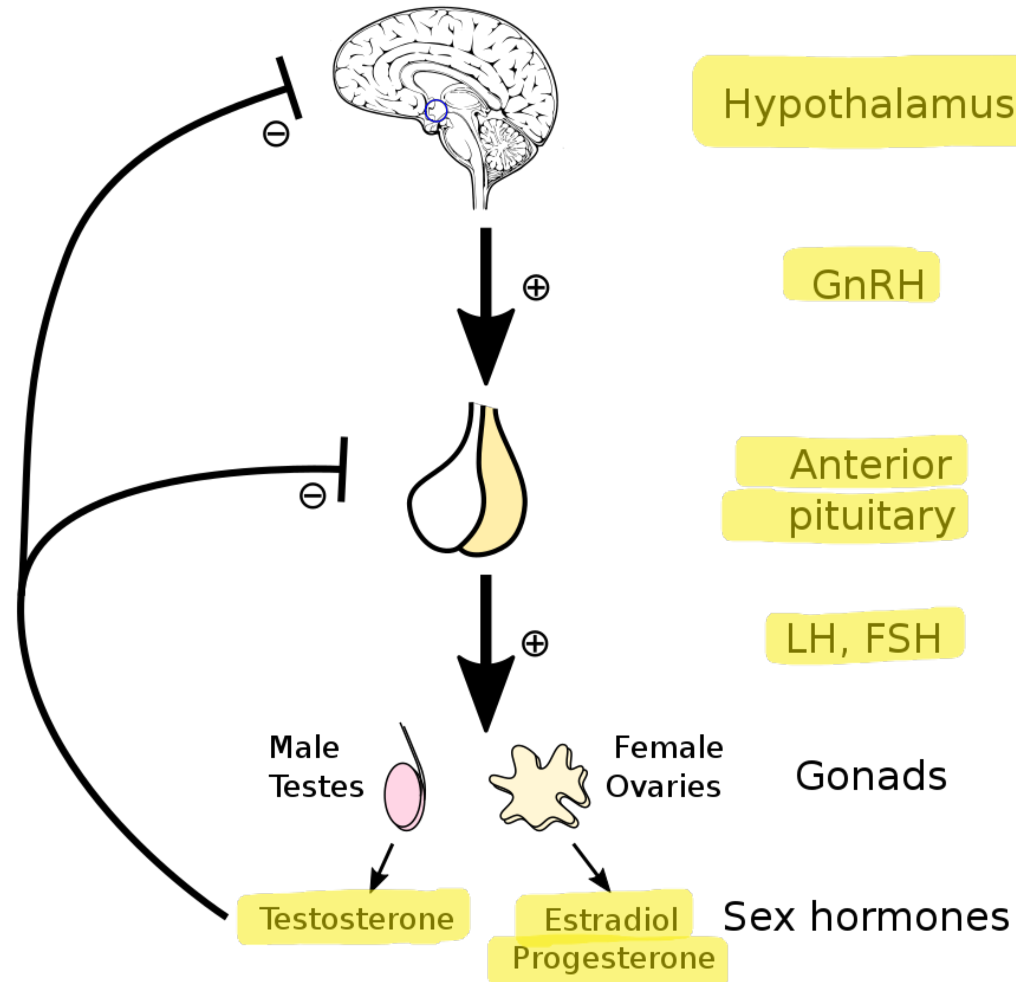
https://chatgpt.com/share/90a49e08-c29f-44a7-89a8-3ccec0c40691

Menstrual Cycle

Jason Ryan, MD, MPH

Boards&Beyond® STUDY SMARTER™

Female Reproductive System



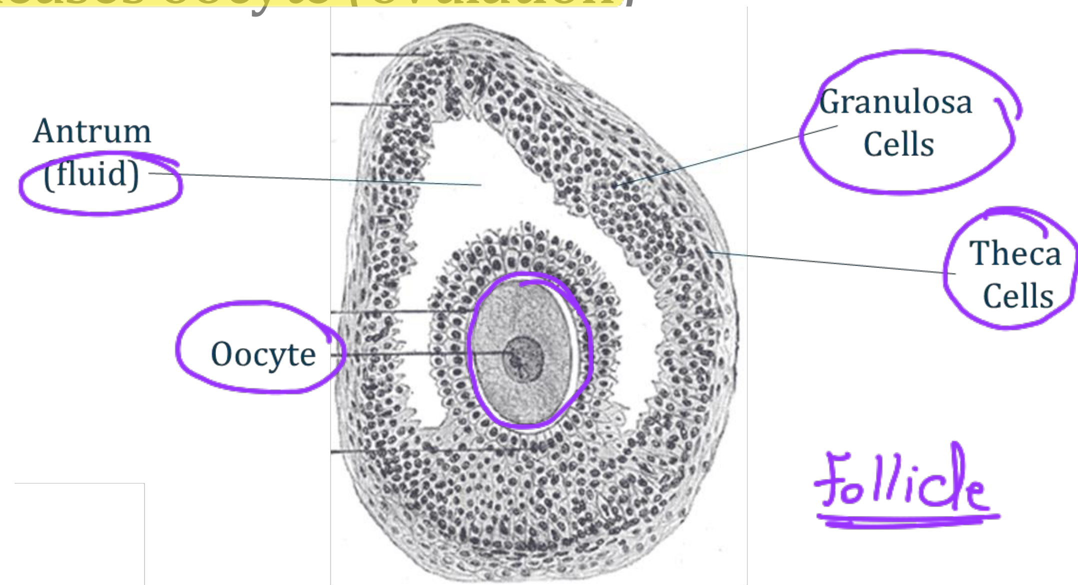
Artoria2e5

Ovaries

Basic Principles

- Contain **follicles**
  - Spherical collection of cells
  - Contains a single oocyte
- Oocyte surrounded by cells **theca and granulosa** cells
- Each menstrual cycle one dominant follicle releases oocyte (ovulation)

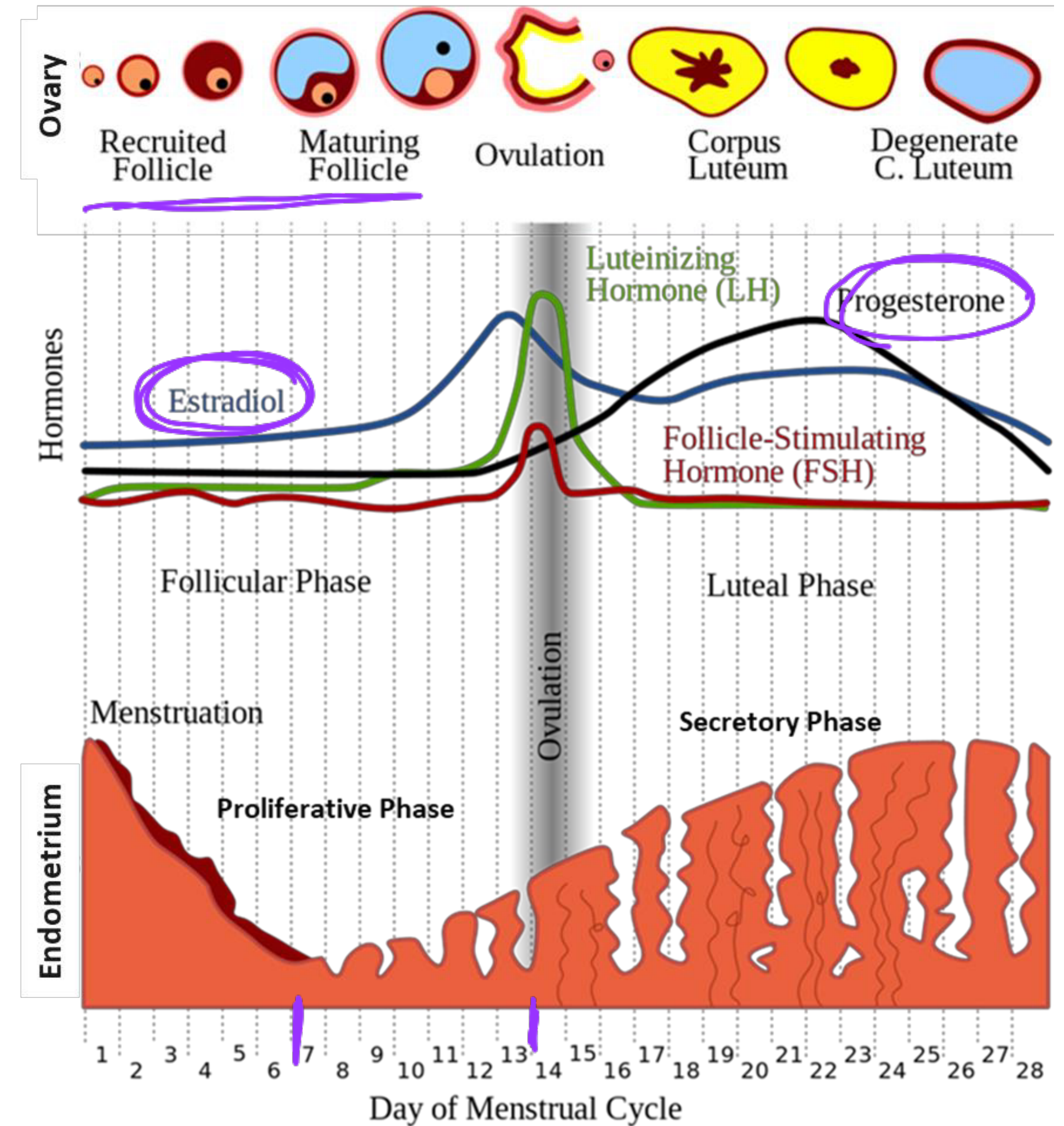
Relase Hormone & Respond to Hormone



Menstrual Cycle

Basic Principles

- Series changes in ovaries and endometrium
- **Ovarian phases**
  - Follicular (growth of follicles)
  - Ovulation
  - Luteal (preparation for pregnancy)
- **Endometrial phases**
  - Proliferative
  - Secretory



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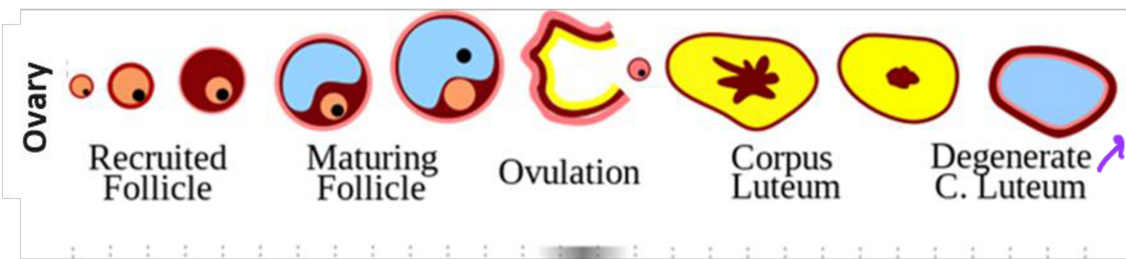
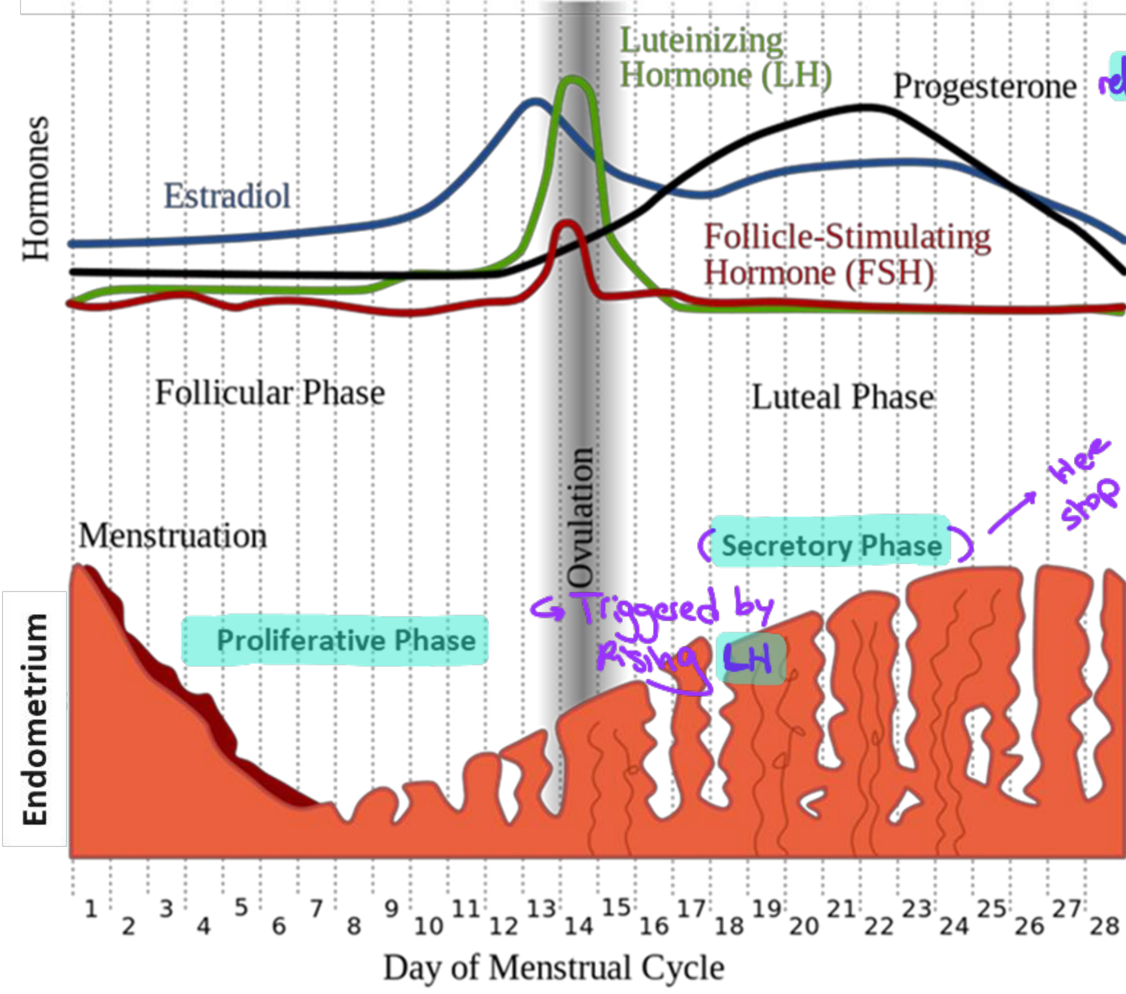
Gonaotropin	Males		Females	
	Gonadal hormone stimulated:	Effect exerted:	Gonadal hormone stimulated:	Effect exerted:
LH	Testosterone			Development of genitalia and breasts
FSH		Spermatogenesis	Estrogen	Follicle stimulation Ovulation

↑ endoslide





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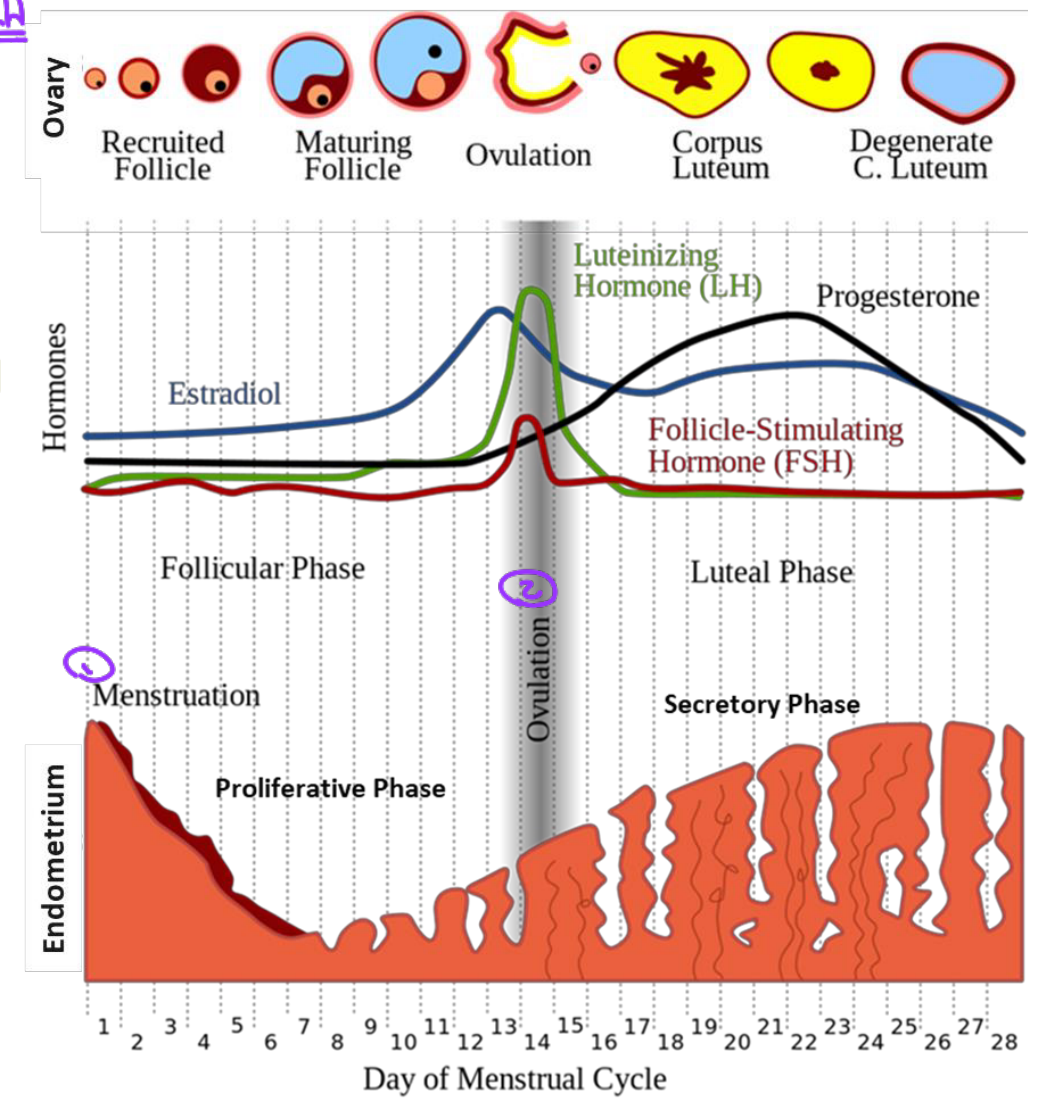
Menstrual Cycle

Follicular and proliferative phases

it mean this phase
From menstruation ① till ovulation ② which triggered by ↑LH

- Menstruation through LH surge and ovulation
- Slowly rising estradiol levels
- Dominant follicle oocyte released at ovulation
- Varies in length: 10-14 days
- Uterine proliferation
- Endometrial thickness increases (> 10x)
- Growth of glands, stroma, blood vessels

((estrogen produced by maturating follicle))



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Menstrual Cycle

Ovulation

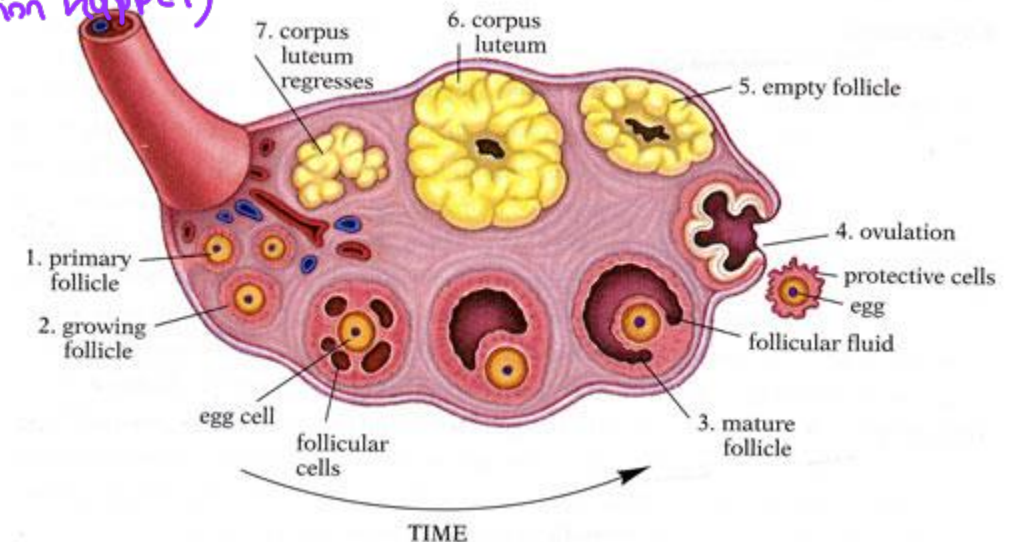
- **Mid-cycle surge** (by LH↑ relased from pitutary)
  - Estradiol triggers → **LH surge** (↑ frequency GnRH pulses)
  - Oocyte released from follicle ~ 36 hours after LH surge
  - Basis for ovulation testing: urine detection of LH → when it's High it mean woman has done or near ovulation & here she is Fertile & can give baby
- **Mittelschmerz** (not happen in all woman)
  - Mid-cycle mild, unilateral pain
  - Due to enlargement of follicle or follicular rupture with bleeding
  - Usually resolves in hours to days
  - Can mimic other disorders (appendicitis)

OTRS/Wikipedia

Menstrual Cycle

Luteal and secretory phases

- **Corpus luteum** forms
- Temporary endocrine gland formed from follicle
- Produces large amounts of **progesterone**
- Progesterone inhibits proliferation of endometrium
- Numerous secretions released to prepare for embryo
- Eventually corpus luteum degrades (If no fertilization happen)
- ↓ progesterone → menstruation
- Occurs 14 days after ovulation



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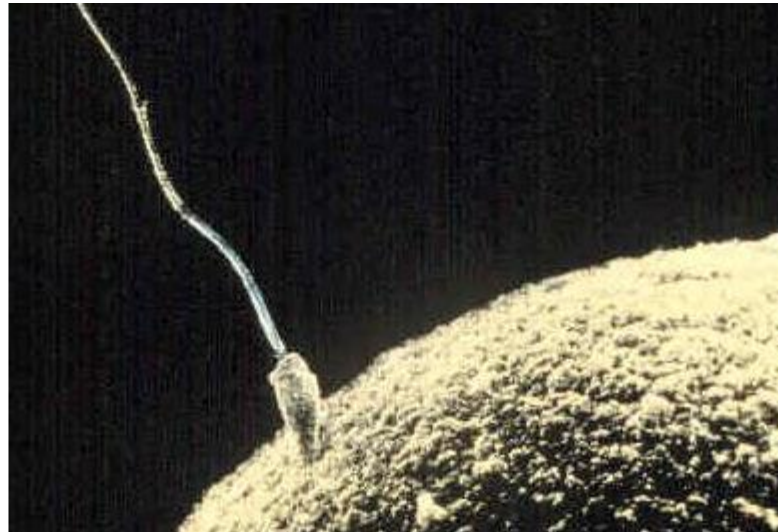
Menstrual Cycle

Luteal and secretory phases

- If fertilization occurs, embryo makes **hCG**
- Maintains the corpus luteum and progesterone production
- Continued progesterone inhibits LH/FSH release & this Inhibit menses



Wikipedia/Public Domain

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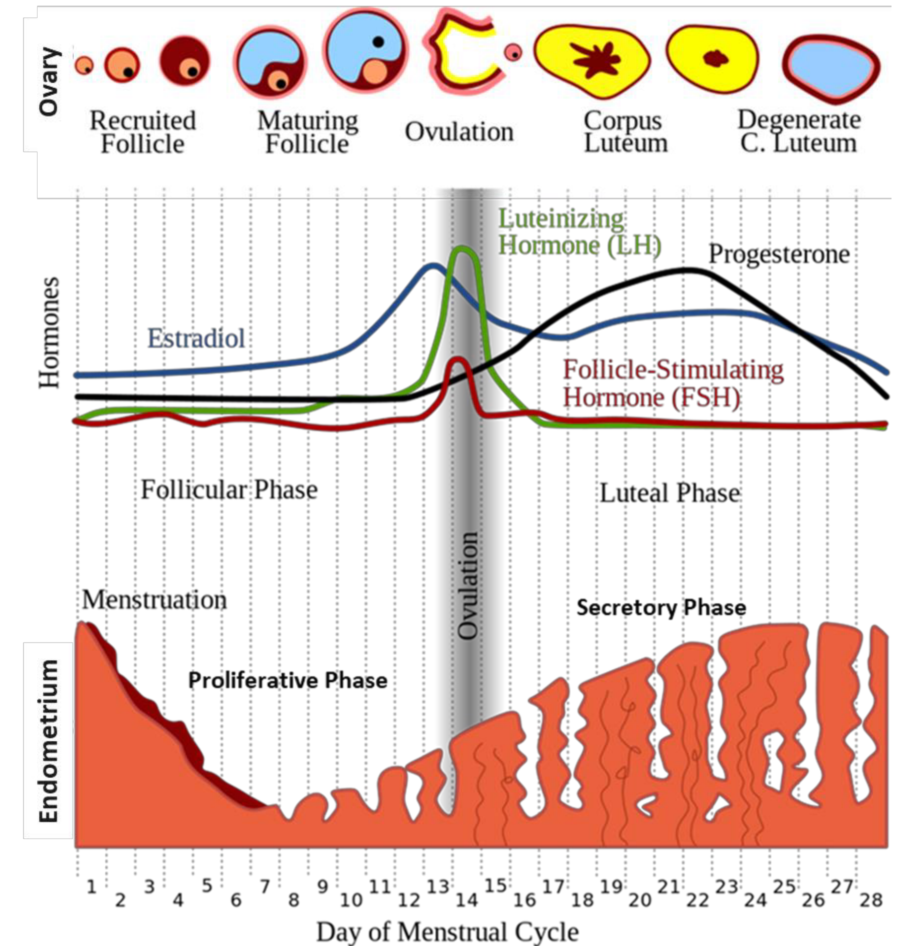
Menstruation

- Progesterone levels fall
- Vasoconstriction of spiral arteries
- Collapse and desquamation of endometrium



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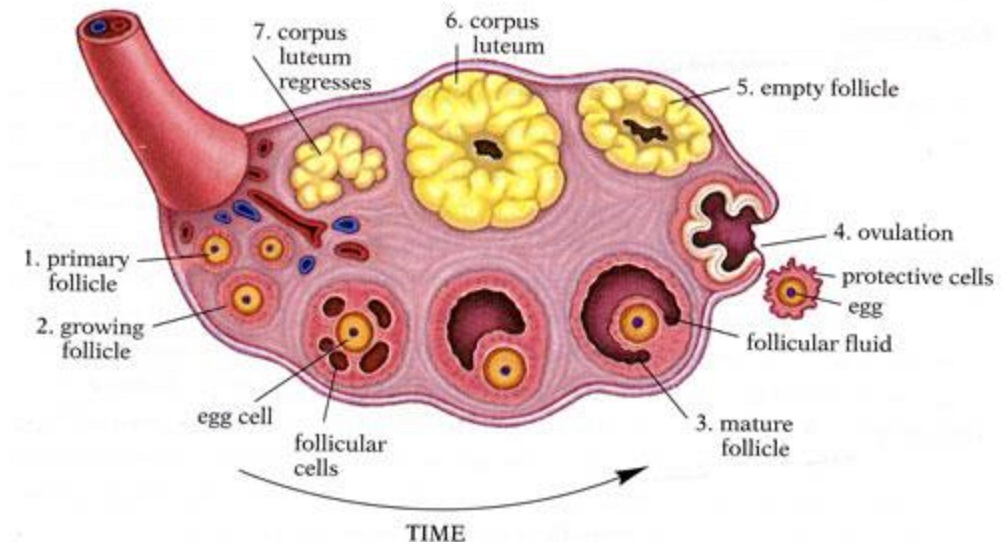
Anovulation

- No luteal phase
- No progesterone release
- Continued estrogen release (causing ↑↑ growth of endometrium)
- No progesterone withdrawal for normal menses
- Endometrial growth → **abnormal uterine bleeding**
- Classic cause: **PCOS**
- Also seen at menarche and perimenopause
- Common cause of **infertility**



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Kimanh Nguyen

Premenstrual Syndrome

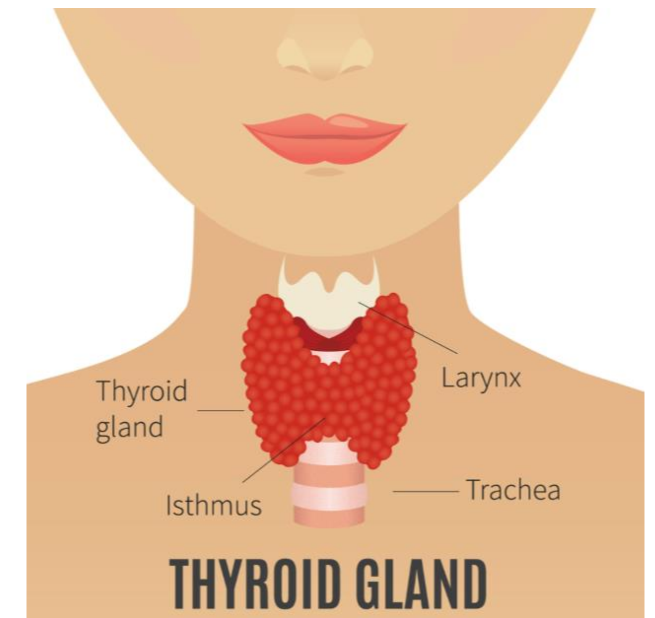
PMS

- Physical and mood symptoms
- Occur 3 to 5 days before menses
- Up to 150 symptoms described
- Most common behavioral symptom: **mood swings**
- Most common physical symptoms: **bloating and fatigue**
- Symptoms resolve with menses
- Symptom free during the follicular phase

Premenstrual Syndrome

Diagnosis

- Patient should record symptoms prospectively for two months
- ACOG: at least one symptom that leads to impairment in functioning
- Patients must be symptom free in follicular phase
- Must exclude **thyroid disease** and other psychiatric disorders



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Premenstrual Dysphoric Disorder

PMDD

- Severe form of PMS
- Prominent symptoms of anger and irritability
- DSM-V: at least 5 symptoms before menses in most menstrual cycles

DSM-V Criteria

At least one of following	One or more to reach total of 5
Affective lability (mood swings) Irritability or anger Depressed mood Anxiety or tension	Decreased interest in activities Difficulty concentrating Lethargy or lack of energy Change in appetite Hypersomnia or insomnia Sense of being overwhelmed Physical symptoms

Premenstrual Syndrome

Treatment

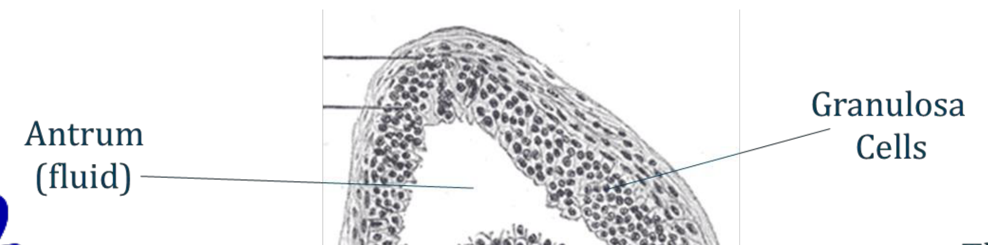
- Mild PMS: exercise and stress reduction
- Severe PMS or PMDD:
  - Combined oral contraceptives
  - SSRIs

Oral Contraceptive Pills

BruceBlaus

Menopause

- Permanent cessation of menstrual periods
- Cause by **depletion of ovarian follicles**
- Median age = 51 years
- Usually preceded by irregular menses
- ↓ estrogens and progesterone from ovaries
- Eventually FSH and LH levels will be elevated



(note) 1

Progesterone and estrogen are primarily released from the ovaries in females. Specifically:

- **Estrogen** is produced mainly by the ovarian follicles, which are the structures in the ovaries tha[t] contain the developing eggs.
- **Progesterone** is produced primarily by the corpus luteum, which is the structure that forms in the ovary after an egg has been released during ovulation.

In addition to the ovaries, smaller amounts of estrogen and progesterone are produced by the adrenal glands and, during pregnancy, by the placenta.

(note) 2

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Menopause

Symptoms

اغلب الأعراض من انخفاض estrogen

- **Hot flashes**
  - Also called vasomotor symptoms or hot flushes
  - Subjective sensation of warmth
  - Usually lasts a few minutes and passes
  - Associated with drop in estrogen levels
- Vaginal atrophy
  - Thin, dry or friable from loss of estrogen stimulation
  - Can be treated with topical estrogen
- Fatigue
- Sleep disturbance

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Menopause

Associated risks

- Osteoporosis
  - Bone loss from lack of estrogen
- Cardiovascular disease
  - Risk increases after menopause
  - May be due in part due to estrogen deficiency
- Altered lipids: ↓ HDL, ↑ LDL

Menopause

Evaluation

- Often presents as hot flashes with irregular menses
- Diagnosis usually made clinically
- Requires 12 months of amenorrhea not due to other cause
- Women under 45: exclude other causes of amenorrhea
  - hCG → exclude pregnancy
  - TSH → exclud thyroid diseas
  - Prolactin → as prolactin cause → ↓GNRH → ↓FSH/LH
  - FSH

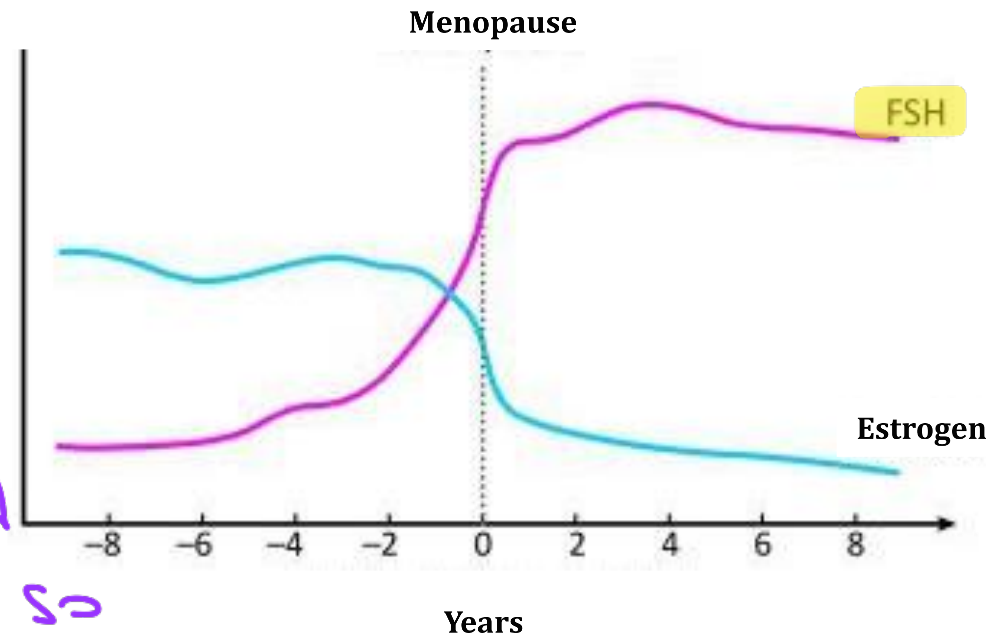
↳ it tell us that amenorrhea caused by menopause not other cause if it was ↑↑

Menopause

Evaluation

- Serum hormone level changes not required for diagnosis
- **Increased FSH**
  - Normal: 6 to 10 mIU/mL
  - Perimenopause: 10 to 30 mIU/mL
  - Menopause: > 30 mIU/mL
- **FSH:LH ratio > 1**
  - FSH rises more than LH

→ as the most Responsible For estrogen Relase is FSH so when ↓estrogen it cause ↑FSH & LH surg happen due ↑estrogen so here it will be low



Menopause

Symptom Management

- Lifestyle modifications for hot flashes
  - Cooler temperature, lighter clothing, fans
- Herbal supplements often used
- Hormone replacement therapy
  - Primary goal is treatment of hot flashes
  - Not used for long-term prevention
  - Risk > benefits for osteoporosis or CAD

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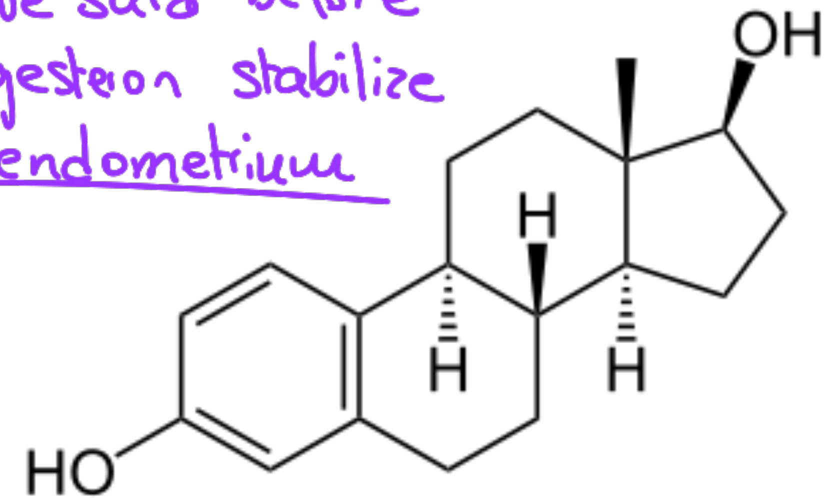
HRT

Hormone Replacement Therapy

- Estrogens and/or progestins
- Estrogens limit menopausal symptoms
- Progestin added in women with intact uterus
  - Prevents endometrial hyperplasia and bleeding → as we said before progesteron stabilize endometrium
  - Not required in women after hysterectomy



Estradiol
(17β-estradiol)

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HRT

Hormone Replacement Therapy

- Transdermal estrogen patch (less thrombotic risk)
- Oral estrogen
- Oral progestin
- Cyclical progestins
  - Used several days per month or less
  - Results in withdrawal bleeding

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	31 New Year's Eve	1 New Year's Day	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19 Martin Luther King Day	20	21	22	23	24
25	26	27	28	29	30	31

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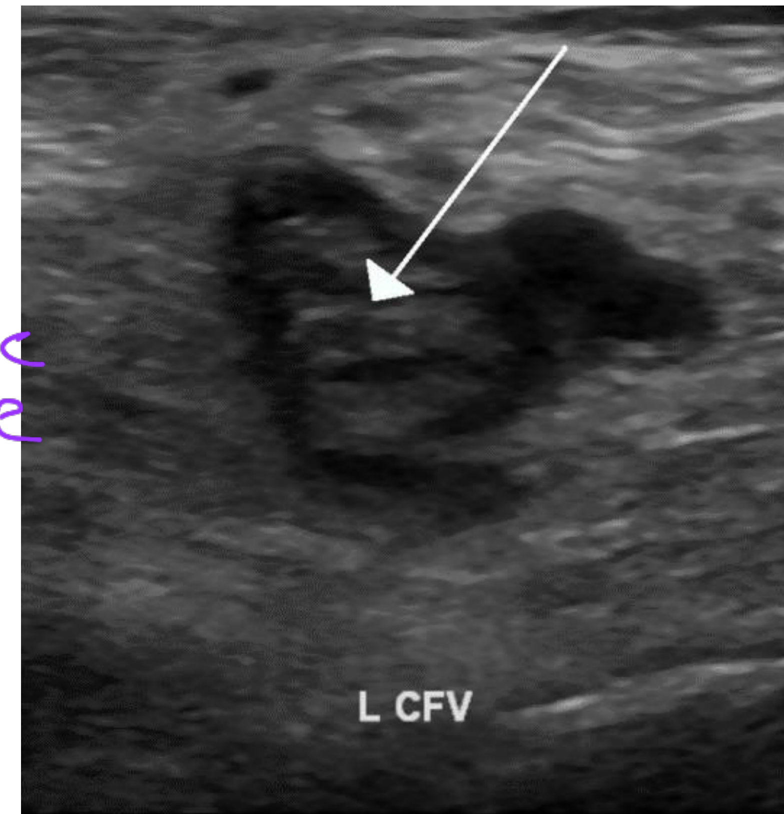
HRT

Risks

- ↑ risk of DVT, stroke and myocardial infarction
- ↑ risk of breast cancer

*estrogen → ↑ clotting factor in blood
→ ↑ stimulate breast tissue growth like progesterone

Deep Vein Thrombosis



James Heilman, MD

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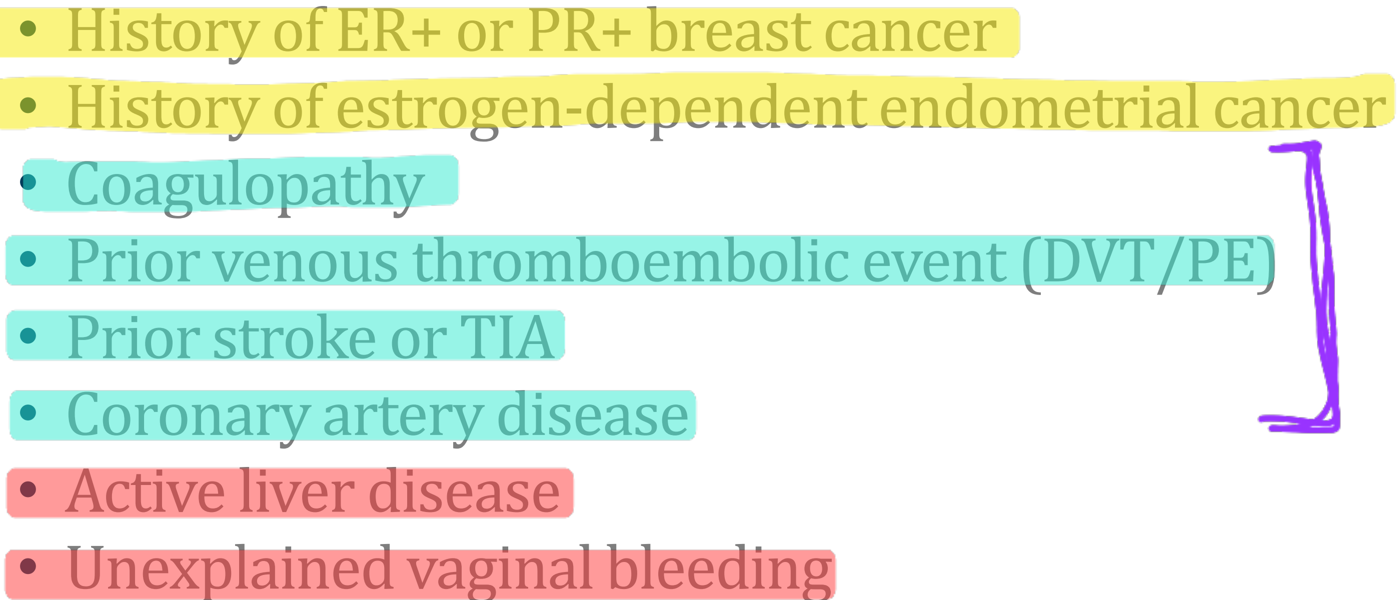
HRT

Contraindications



Primary Ovarian Insufficiency

- Impaired ovarian function before 40 years of age
- Presentation and treatment similar to menopause
- Causes:
  - Chemotherapy or radiation therapy
  - Familial
  - Autoimmune disease
  - Genetic disorders (Fragile X mutation carriers, Turner syndrome)

Contraception

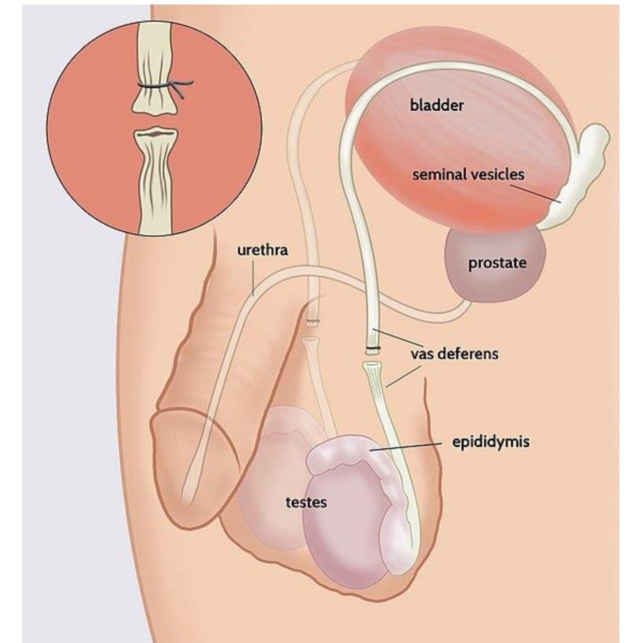
Jason Ryan, MD, MPH

Contraception

- Barrier (condoms, diaphragm, sponge)
- Vasectomy
- Tubal ligation
- Intrauterine device
- Hormonal

Vasectomy

- Ligation of bilateral **vas deferens**
- Usually outpatient under local anesthesia
- Semen analysis three months postoperatively to confirm sterility
    - If sperm at 3 months → follow-up test 1 to 2 months later
    - Failure if sperm at follow-up after > 20 ejaculations and > 3 months
- Use alternate method of contraception until semen analysis
- Usually permanent
- Rare cases of recanalization (~ 0.2% of patients)
- Reversal possible in some cases



Timdwilliamson

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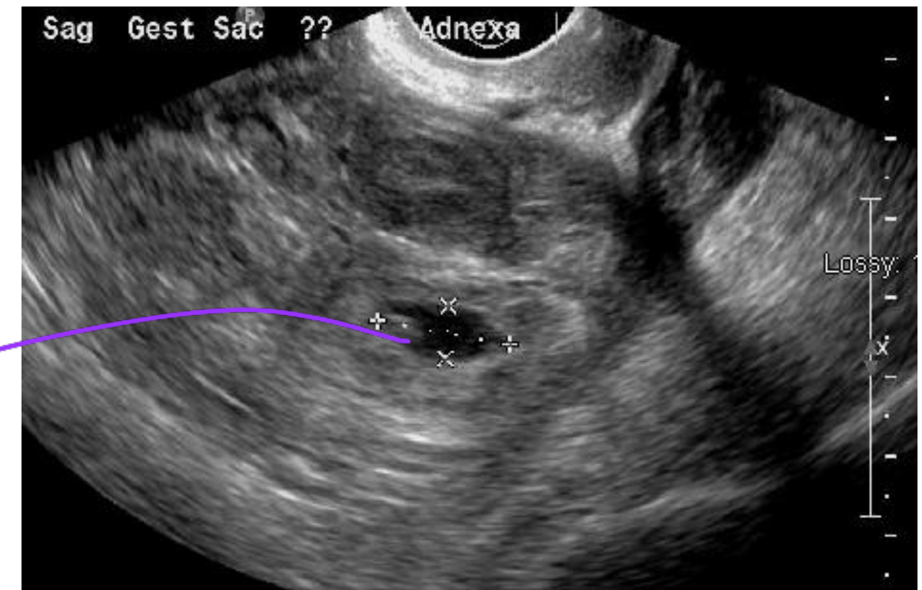
Female Permanent Contraception

Sterilization or Tubal Ligation

- Variety of surgical techniques
- Goal is disruption of fallopian tubes
- Often done postpartum
- Also performed outside pregnancy (“interval”)
- Very low failure rate
- Reversible in some cases based on technique
- Long-term risks: **ectopic pregnancy**

adnexal mass

Ectopic Pregnancy



James Heilman, MD/Wikipedia

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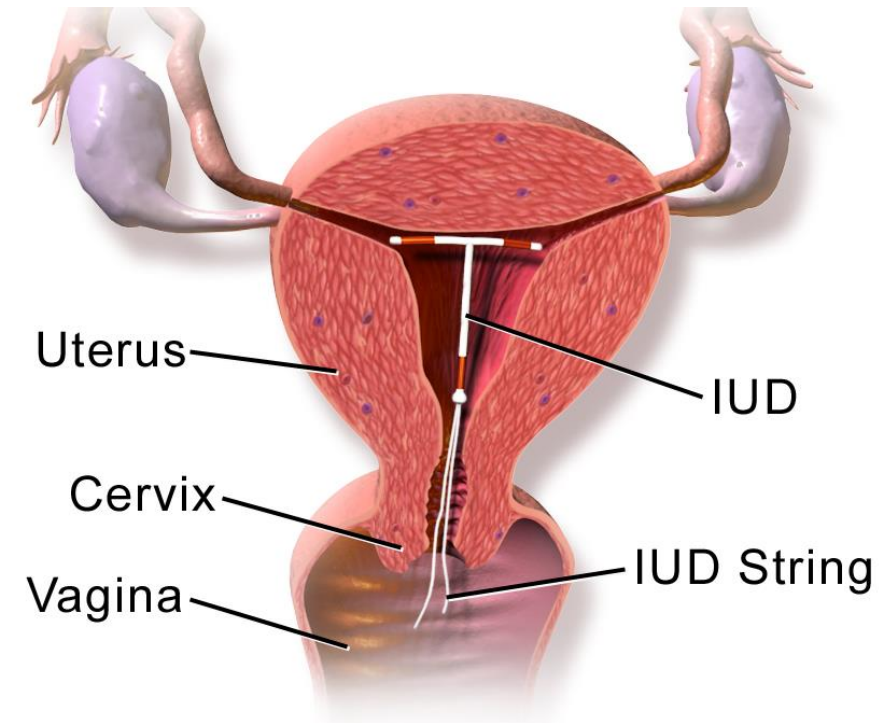
Intrauterine Devices

- Long-acting *reversible* contraception
- Low failure rate similar to permanent sterilization
- Two major types
  - Copper IUD
  - Levonorgestrel (LNG) IUD



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Copper IUD

- Copper → inflammatory response in endometrium
- Impairs sperm migration/viability and implantation
- Heavier and more painful **menstrual bleeding**
- Especially first 6 months
- Commonly leads to patient request for removal
- Marketed as hormone free IUD
- Last up to 10 years

* all of these due Inflammatory Response In endometrium

Copper IUD

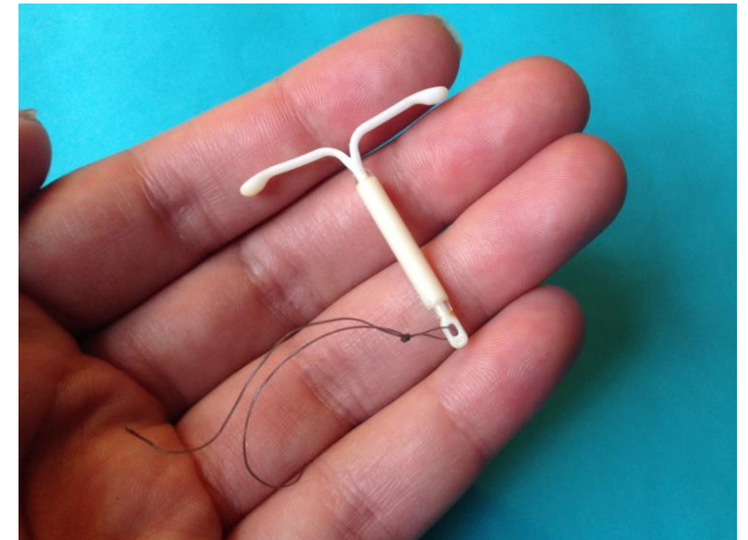
LeiaWonder

Levonorgestrel IUD

- Polyethylene frame with LNG (progestin)
- Thickens cervical mucus as barrier and impairs implantation
- Last up to 7 or 8 years
- Causes amenorrhea and **improves abnormal uterine bleeding**
- Good option in women with heavy menses
- Safest and most effective form of contraception

as progesterone stabilize the endometrium so no bleeding or menstruation

https://chatgpt.com/share/3feb3cb1-d4ad-49df-8e35-8981b77aab08



Sarahmirk

Intrauterine Devices

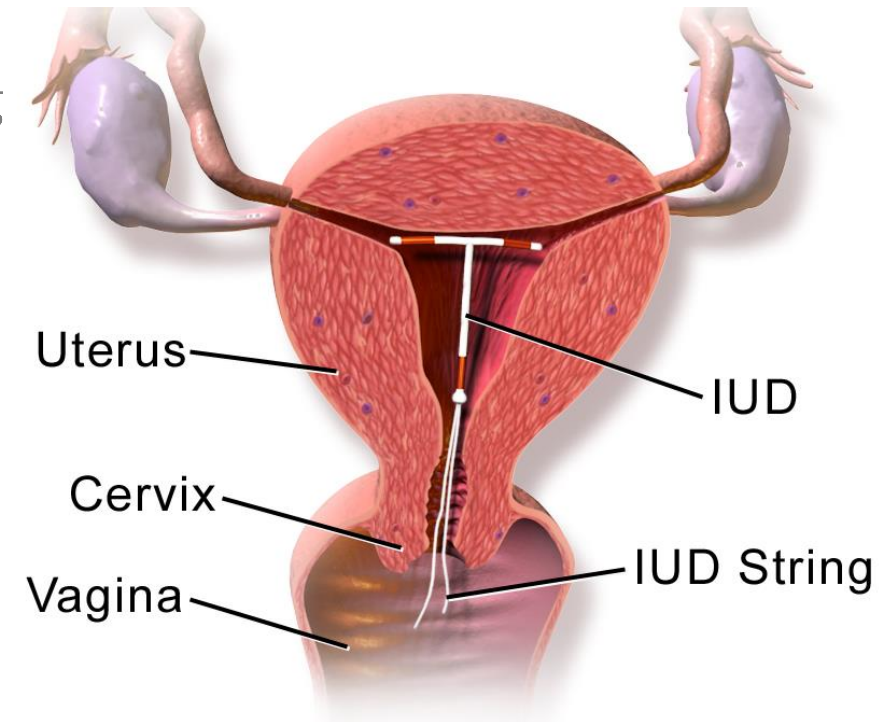
Complications

- Irregular bleeding or cramping
  - Usually resolves over first few months
  - Does not indicate decreased efficacy
- Altered menstrual periods
  - Copper IUD: heavier periods with stronger cramping
  - LNG IUD: amenorrhea or irregular periods

Intrauterine Devices

Complications

- Rare complication: **uterine perforation**
  - Often asymptomatic and found when IUD string not felt
  - Rarely leads to pelvic pain with excessive cervical bleeding
- If failure occurs: ↑ risk of **ectopic pregnancy**



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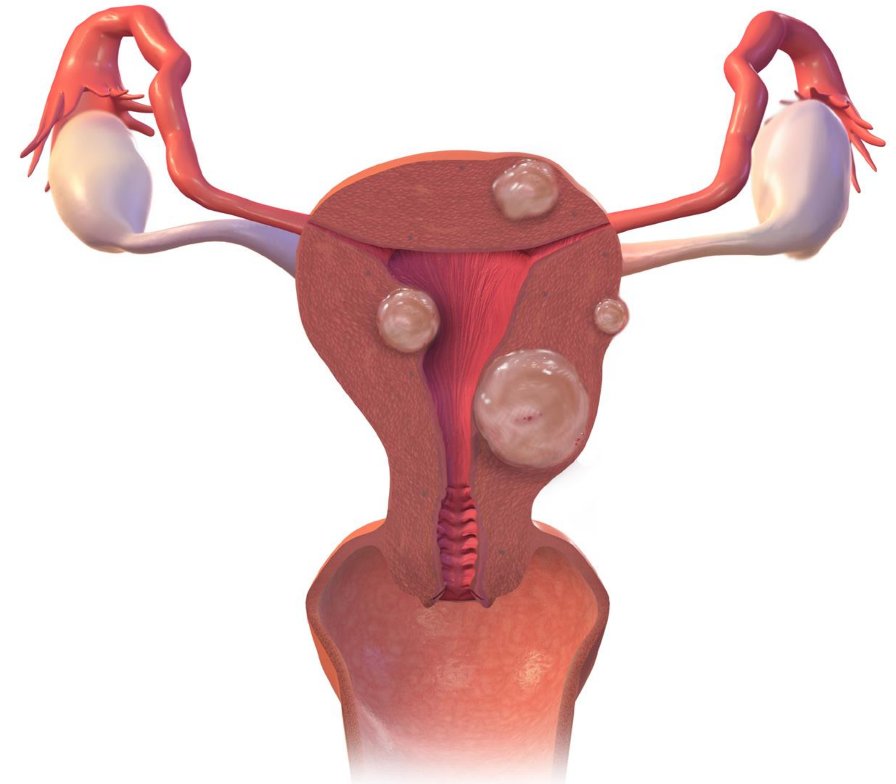
Intrauterine Devices

Contraindications

- Anatomic uterine abnormalities
  - Bicornuate uterus
  - Leiomyoma (fibroids)
  - Sometimes IUD can be placed with US guidance
- Unexplained uterine bleeding
- Pregnancy or pelvic infection
- Endometrial or cervical cancer
- LNG IUD:
  - History of PR+ breast cancer
  - Active liver disease



Uterine Fibroids

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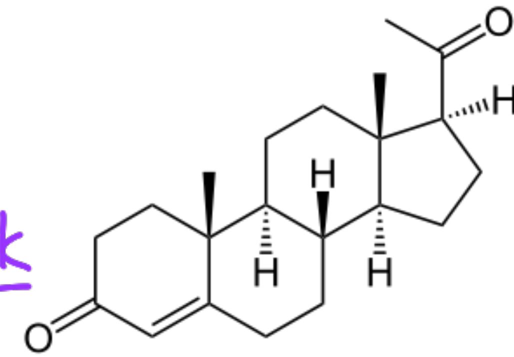
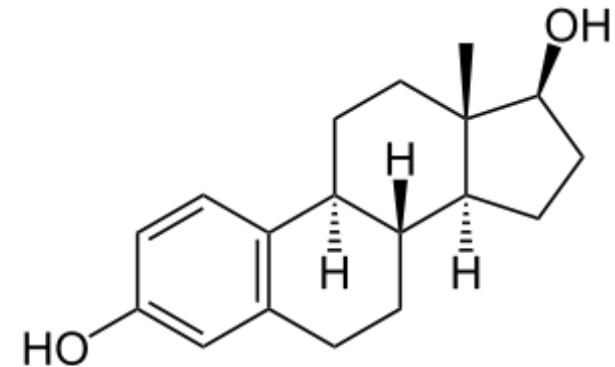
Hormonal Contraceptives

- **Progestins**
  - Thickens cervical mucous
  - Thins endometrium to prevent implantation
  - High dose blocks LH surge → absence of ovulation
- **Estrogens**
  - Suppress FSH release
  - Limits follicular maturation
  - Increases effects of progestins
  - Main benefit: stabilizes endometrium
  - **Less breakthrough bleeding**

This How leveno IUD work



Progesterone



Estradiol

Less Breakthrough Bleeding:

- By stabilizing the endometrium, estrogens help reduce the incidence of breakthrough bleeding.
- Breakthrough bleeding is unscheduled bleeding that can occur between menstrual periods, often seen with hormonal contraceptive use.

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Progestin Only Contraceptives

- Mini pill (norethindrone)
  - Thickens cervical mucous for 20 hours
  - Must be taken same time every day
- Implant (etonogestrel)
  - Placed in upper arm - 3-year lifespan
  - Rarely used due to irregular bleeding

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Progestin Only Contraceptives

- Injection
  - Depo Provera (medroxyprogesterone)
  - Given every 3 months
  - Irregular bleeding
  - May cause weight gain[1]
  - 3 years: + 11 lbs
  - COCs: + 3 lb
- Many non-contraceptive uses
  - Endometriosis
  - Adenomyosis
  - AUB
  - Fibroids
  - Endometrial hyperplasia

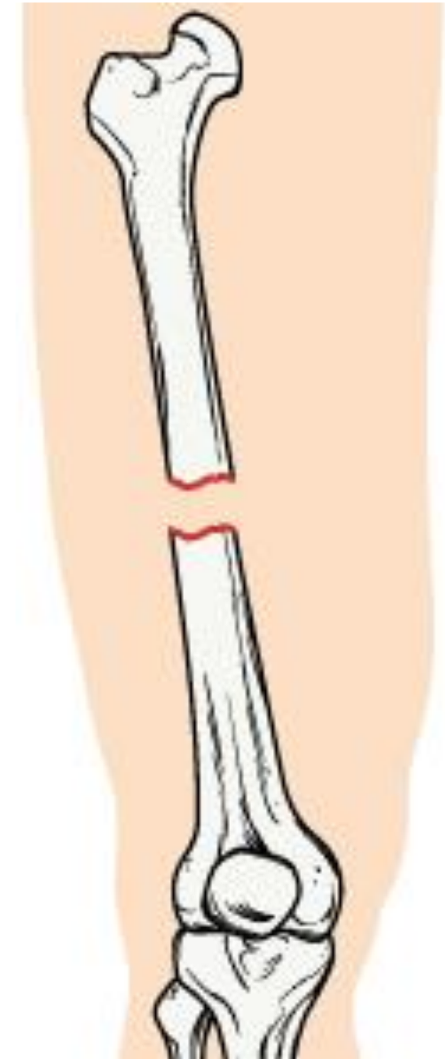
Remember progesteron thin endometrium

Public Domain

1. Berenson et al. *Am J Obstet Gynecol*. 2009;200(3):329

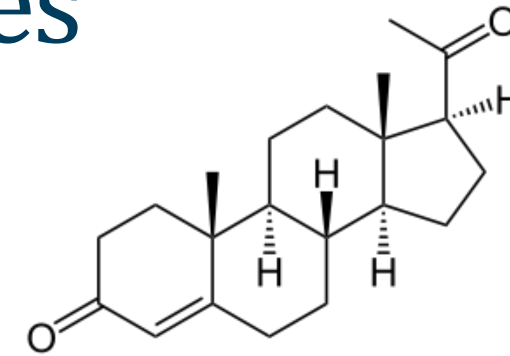
Progestin Only Contraceptives

- All associated with **irregular bleeding**
- Often used in women with estrogen contraindications
- Cannot be used in women with breast cancer
- Depo-Provera associated with ↓ **bone mineral density**
  - Suppression of estrogen production
  - Improves with cessation of contraception
  - Encourage calcium, vitamin D and exercise
  - Routine monitoring of BMD not recommended
- Mood changes (depression) may occur
- Very rare with progesterone IUD

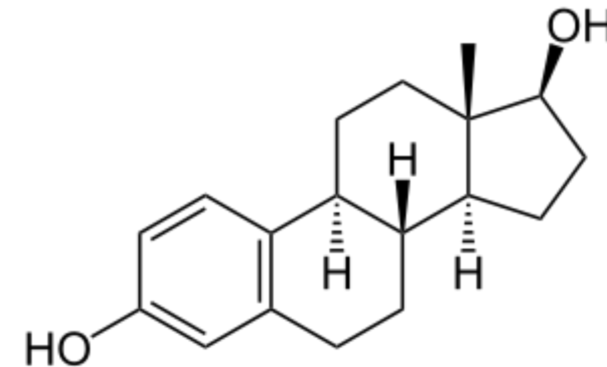


Combination Oral Contraceptives

- Combination of **progestin and estrogen**
- Better suppression of follicular growth
  - Progesterone suppresses LH
  - Estrogen suppresses FSH
- Estrogen increases effect of progesterone
- **Less breakthrough bleeding**
  - Estrogen stabilizes endometrium
- Many have 24/4 formulation
  - 24 days of hormone pills
  - 4 days of placebo pills



Progesterone



Estradiol

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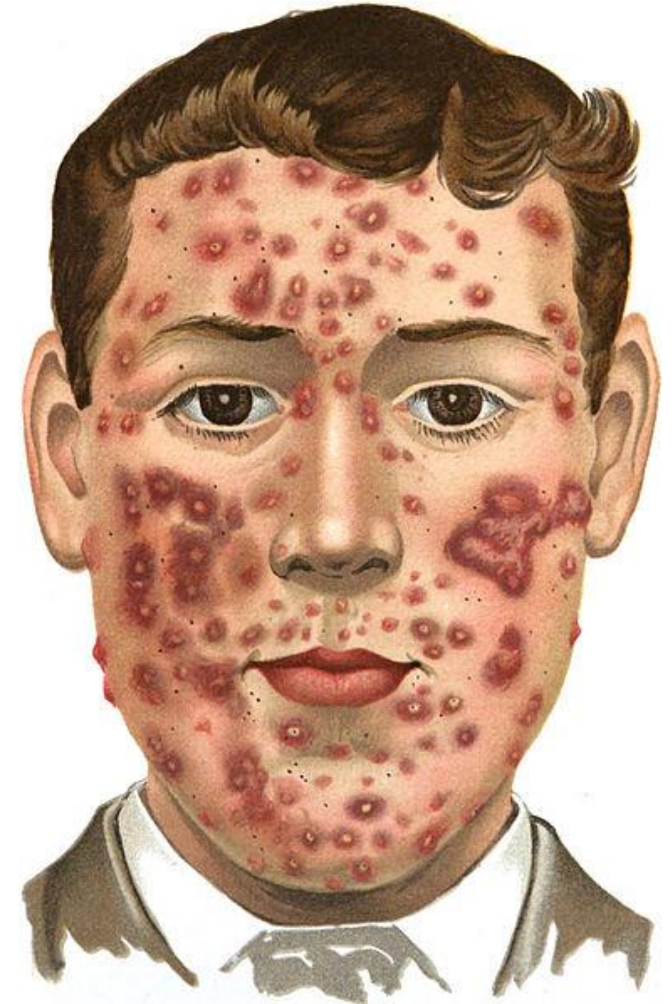
Combination Oral Contraceptives

Non-contraceptive benefits

- Decreased risk of ovarian and endometrial cancer
- Menses more predictable and lighter
- Improves acne



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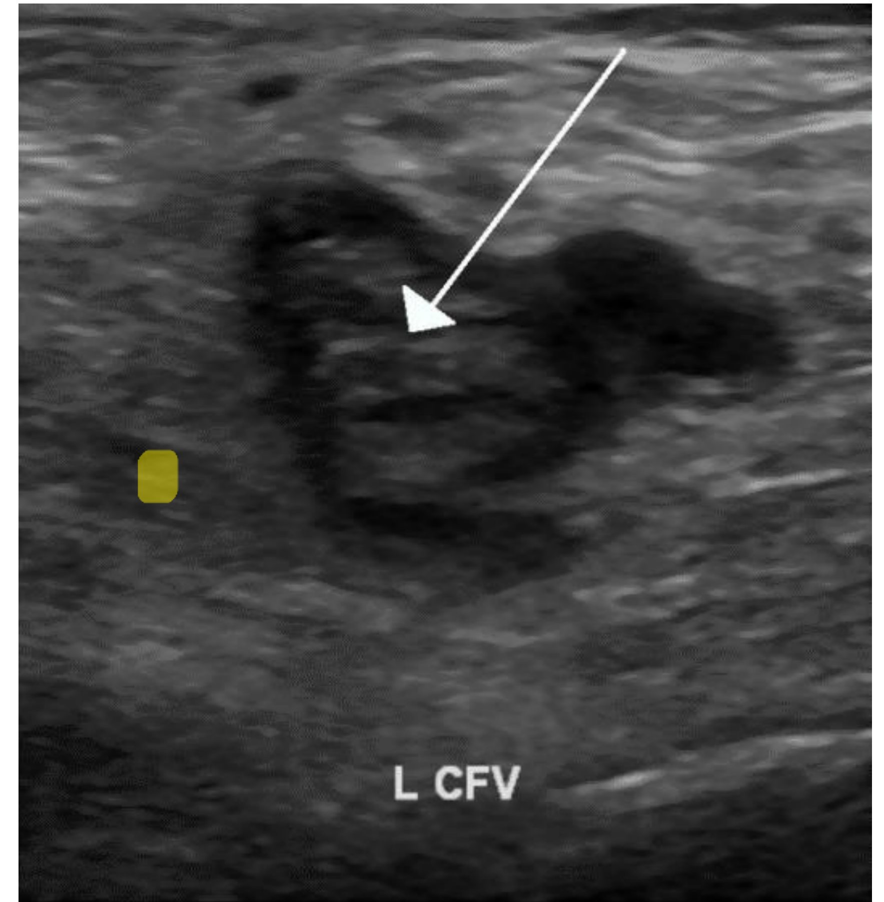
Combination Oral Contraceptives

Adverse Effects

- Most common: nausea and headache
- **Breakthrough bleeding**
  - More frequent if low estrogen component
  - Does not indicated decreased efficacy
  - Usually resolves spontaneously
- Hypertension (usually mild)
- **Thrombosis**
  - Estrogen increases clotting factors
  - Usually venous thrombosis: DVT/PE
  - Rarely arterial thrombosis: stroke/MI

mainly venous



James Heilman, MD

Combination Oral Contraceptives

Estrogen contraindications

- **Smokers > 35 years of age** {Risk of DVT}
- History of DVT, PE, stroke or MI
- Breast cancer
- Hepatocellular adenoma
- Cirrhosis
- Migraine with aura
- Hypertension
  - CDC: systolic ≥ 140 mmHg or diastolic ≥ 90 mmHg
  - WHO: systolic ≥ 160 mmHg or diastolic ≥ 100 mmHg

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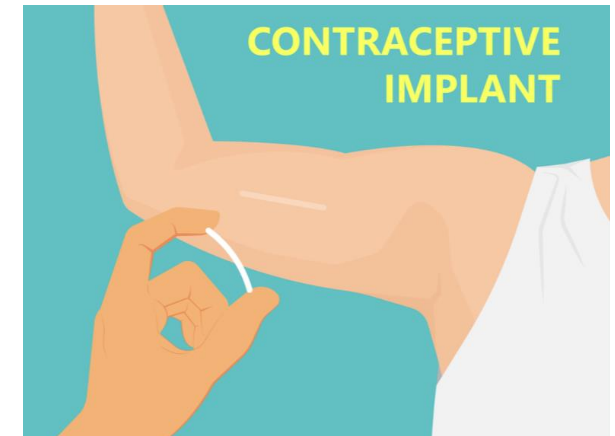
Postpartum Contraception

[postpartum:
- estrogen → X
- progesteron → ✓]

- Lactational amenorrhea may occur but unreliable
- Barrier methods can be used
- Estrogen avoided for at least 1 month postpartum
  - Increased risk of thromboembolism
  - Decrease breast milk production
- Common options: IUD or progestin implant
  - Copper IUD may cause bleeding: avoided if ongoing bleeding or anemia
  - LNG IUD may be used but some risk of expulsion
  - Progestin implant often used (more reliable than pills)



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