
بسم الله الرحمن الرحيم

قالوا سبحانك

لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم

سورة البقرة - الآية ٣٢

Prophylactic Oophorectomy

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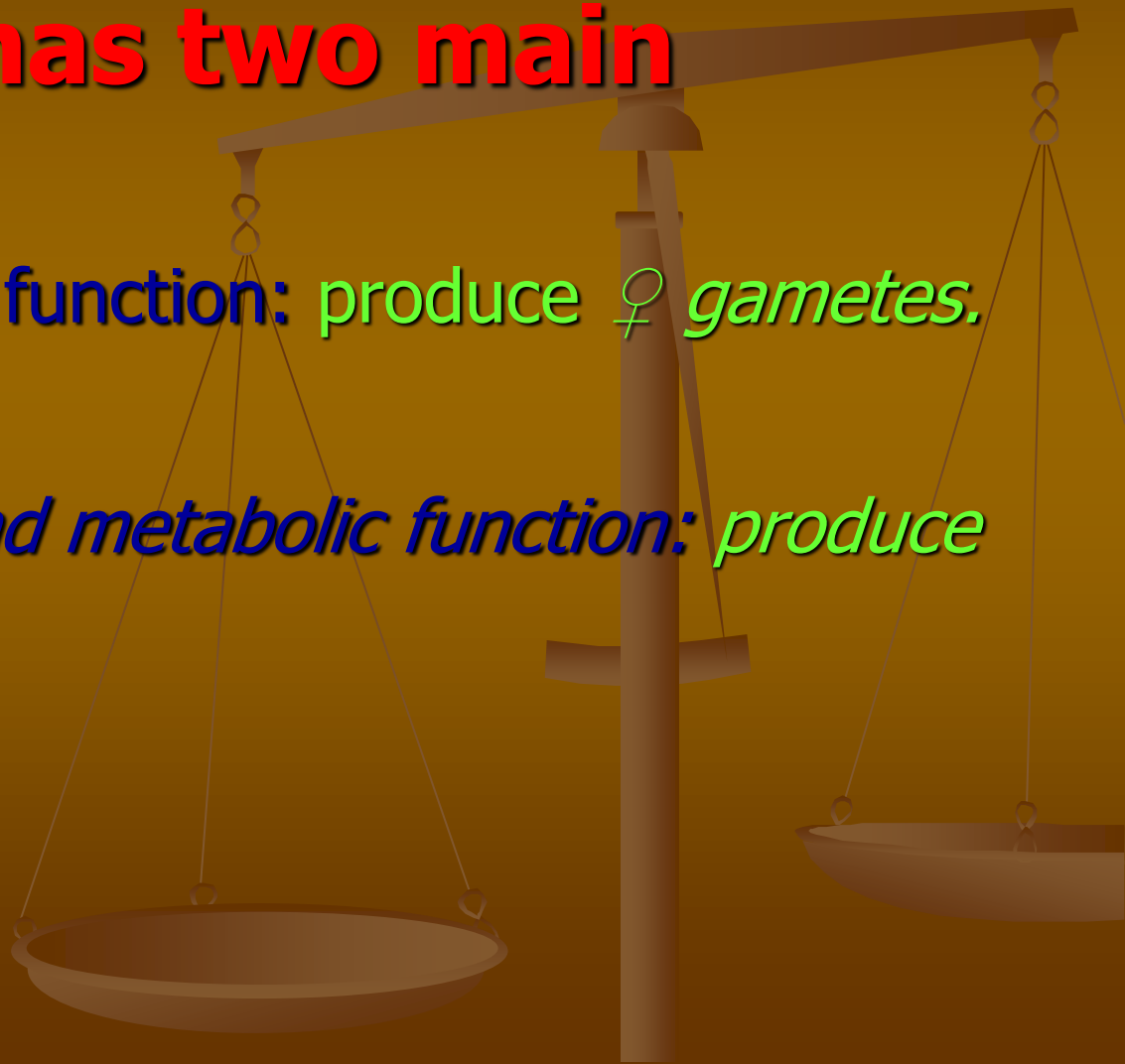
Ovarian Physiology

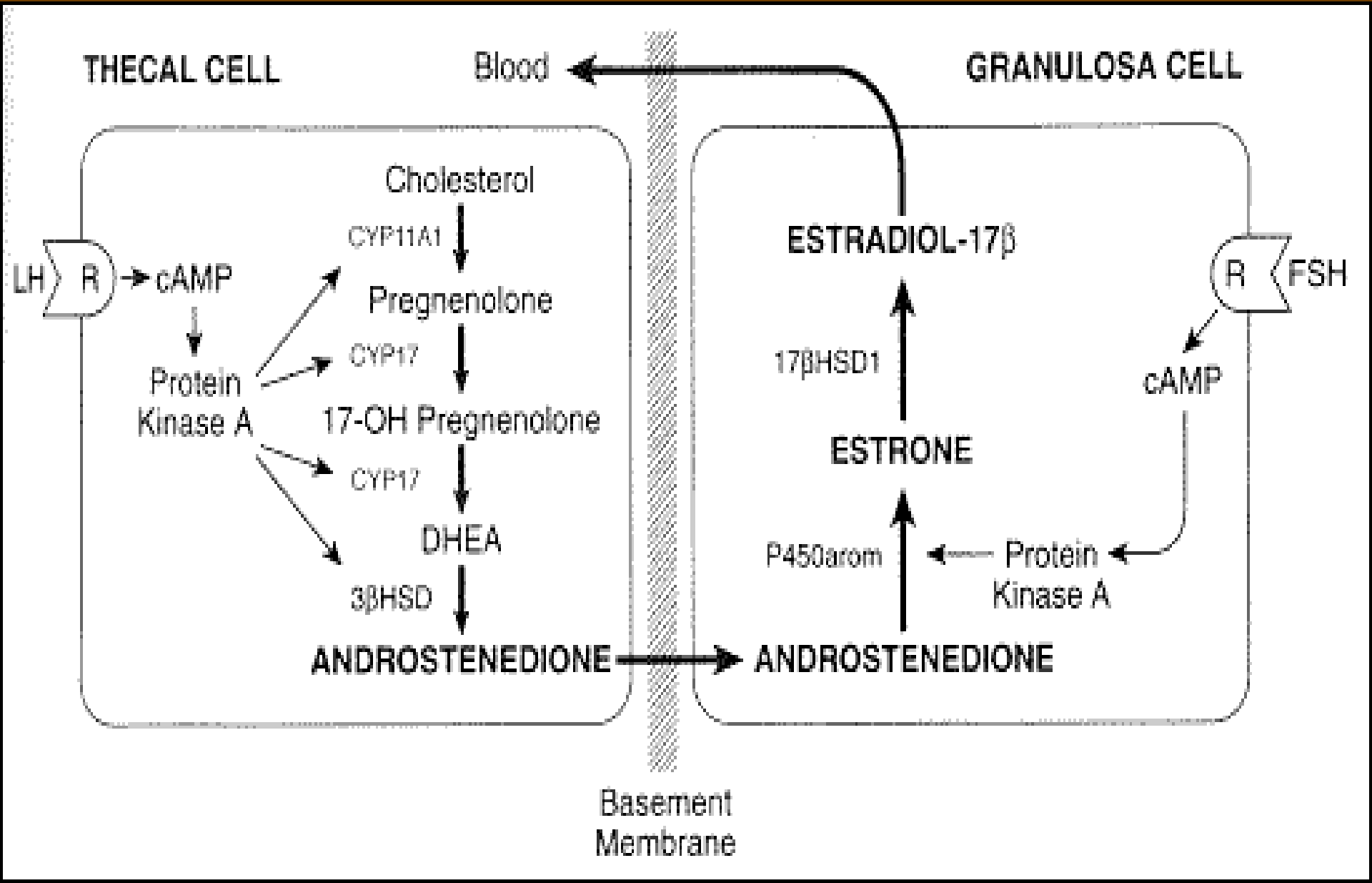
- **The ovary has two main functions:**
  - 1-Reproductive function: produce ♀ *gametes.*
  - *2-Endocrinal and metabolic function: produce hormones.*



Ovarian Physiology

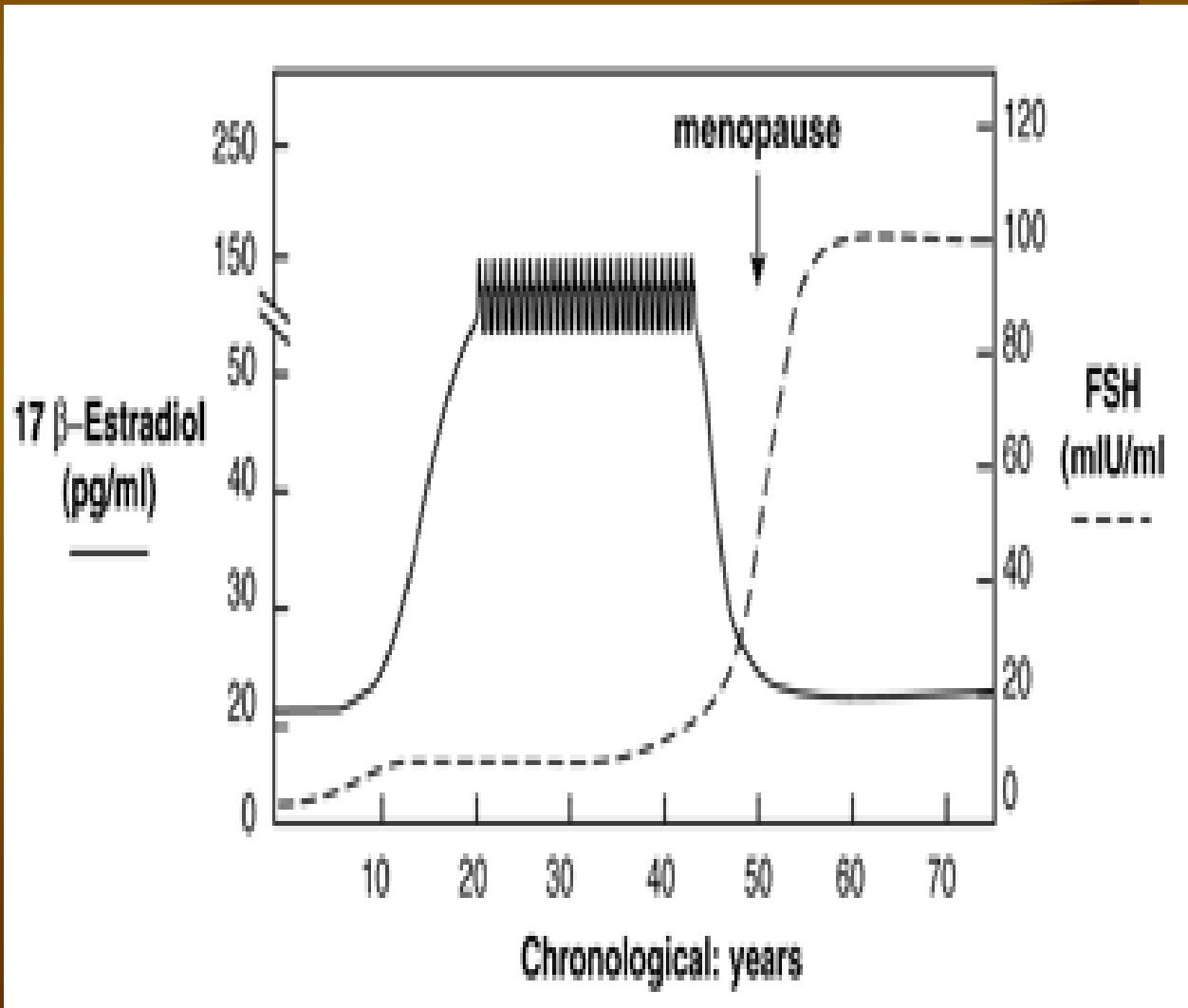
- The ovary is a complex metabolic organ consisting of Follicular and stromal compartments.
  1-Follicles: produce both androgens and estrogen.
  2-Stromal tissue: synthesizes androgens.

Ovarian steroidogenesis

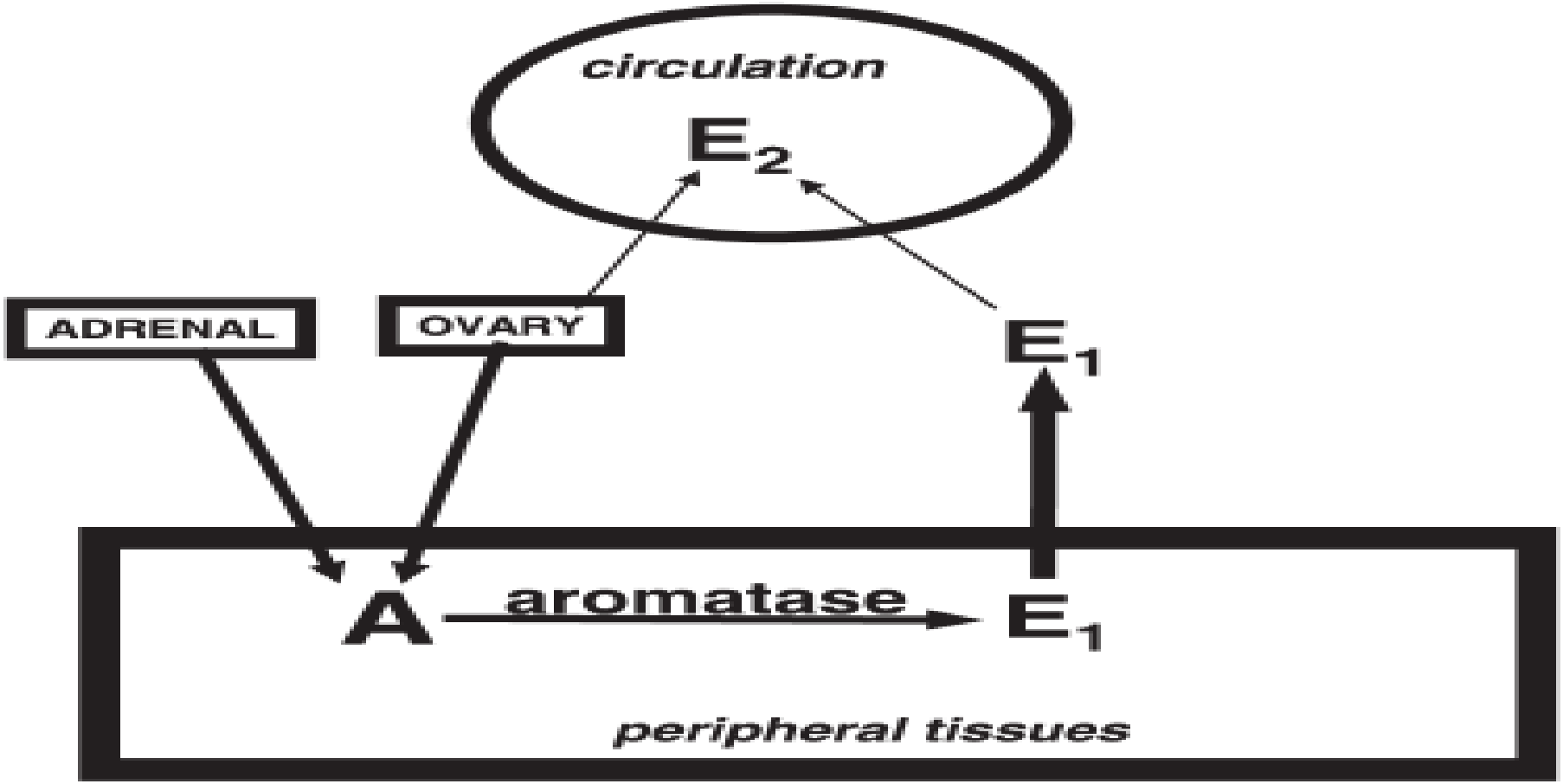


Ovarian Physiology

- With the loss of all follicles around *menopause*, both androgen and estrogen levels decrease.

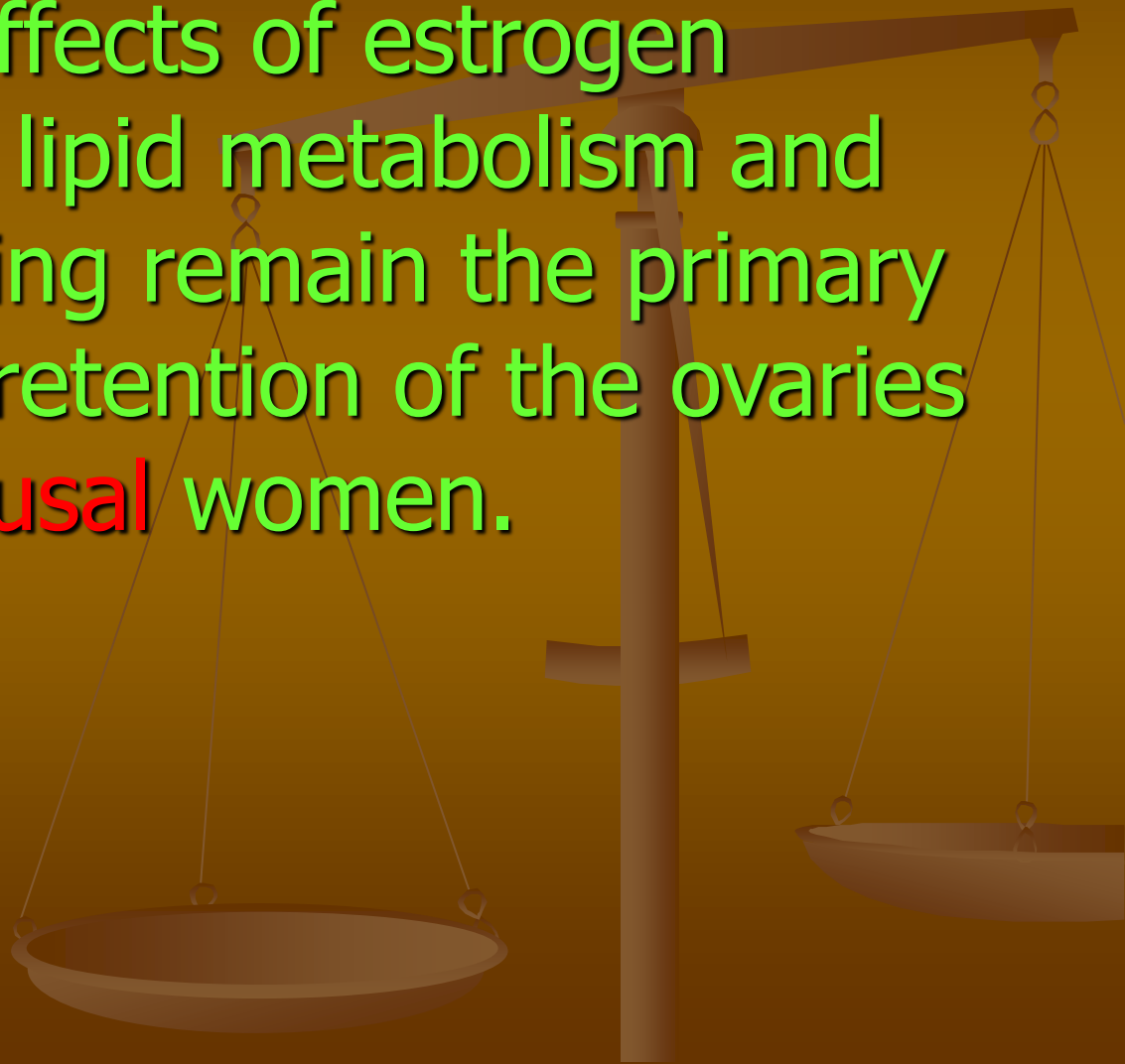


But the ovary remains a source of postmenopausal androgens that are peripherally converted to estrogen.



Ovarian Physiology

- The positive effects of estrogen production on lipid metabolism and bone remodeling remain the primary argument for retention of the ovaries in premenopausal women.



Ovarian Physiology

- The benefits of estrogen are well documented , but any benefits of ovarian androgen production remain to be documented .
- The role of endogenous androgens and the consequences of their removal may be significant but have not yet been clarified.

Prophylactic Oophorectomy

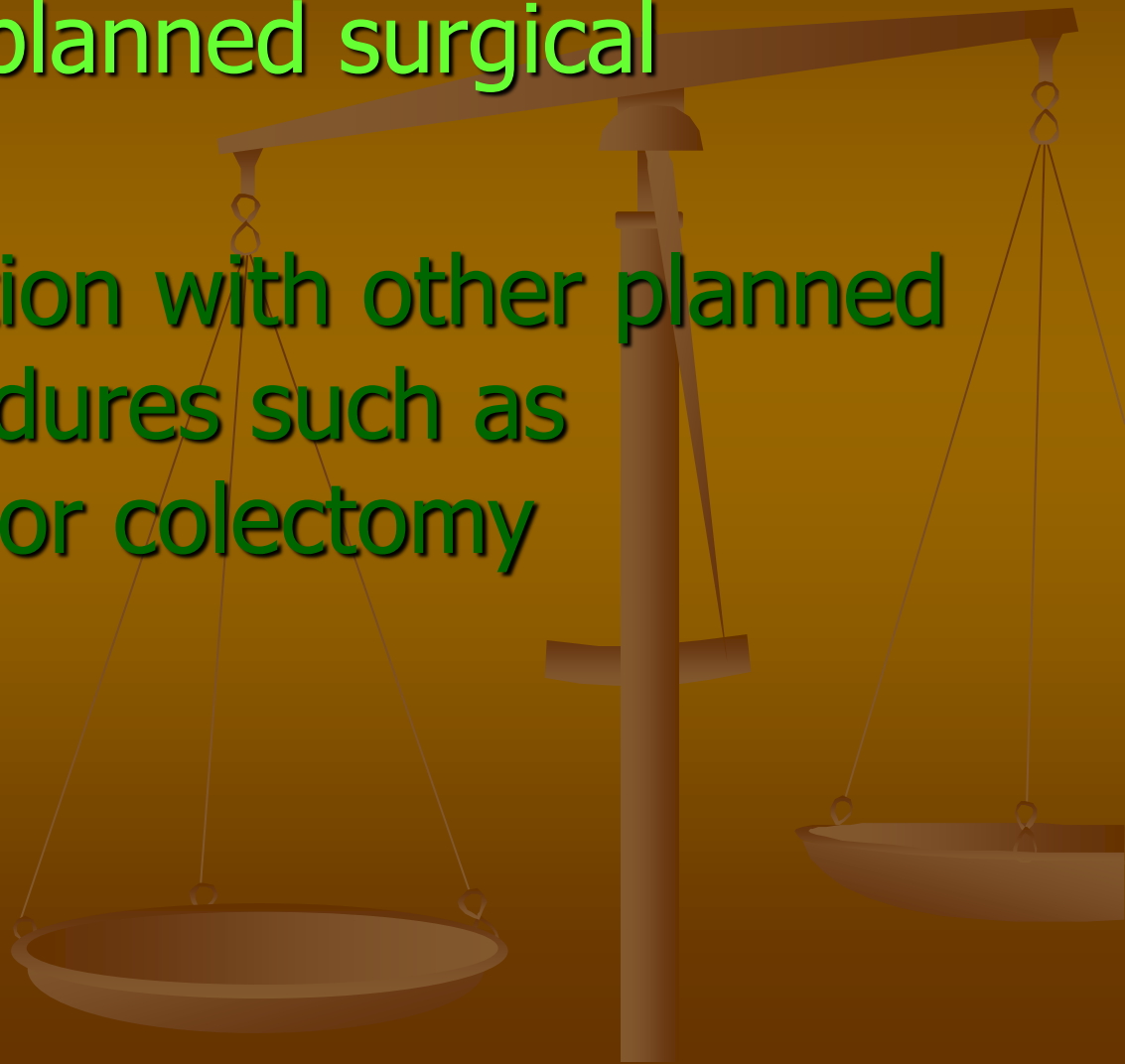
- **Def:** Prophylactic oophorectomy is the removal of the ovaries for the potential benefit of preventing long-term morbidity and mortality.
  N.B: **The term prophylactic** implies that the ovaries are normal at the time of removal.

Incidental oophorectomy :

- Def: is a term commonly used when the ovaries are removed at the time of another indicated surgery, and this term should not be used interchangeably with ***prophylactic oophorectomy***.
  N.B: The term incidental implies that the surgery occurs by chance or without consequence.

Oophorectomy can be performed either:

- 1- Alone as a planned surgical procedure or
- 2- In conjunction with other planned surgical procedures such as hysterectomy or colectomy



Incidence of Prophylactic Oophorectomy

- The literature has recorded elective oophorectomy rates of between 50% and 66% in women 40-64 years of age undergoing hysterectomy .
- Data from the Centers for Disease Control and Prevention collected between 1988 and 1993 concur that ovarian retention occurs in approximately 40-50% of patients undergoing hysterectomy at 40 years of age or older.

Indications Of Prophylactic Oophorectomy

- 1- Female with Dysgenetic ***gonads*** ***<30yrs old*** with Y chromosome.
- 2- Patient with hereditary nonpolypsis colorectal cancer.
- 3- Old patient during pelvic or general abdominal surgery???.

Indications Of Prophylactic Oophorectomy

- 4- Some cases of breast cancer.
- 5- Malignant tumor of FGT, If one ovary has malignancy and the other is normal, in old age or in patient with complete family.
- 6- Patient with BRCA1, BRCA2 mutations.

Indications Of Prophylactic Oophorectomy

- BRCA1, BRCA2 are tumor suppressor genes present in chromosome No 17,13,respectively.
- They encodes protein necessary for DNA repair.
- Any mutation →Uncontrolled cell growth →cancer in Breast, Ovary ,Tube and/or Peritoneum.

	BRCA1 mutation carrier	***BRCA2 mutation carrier***
Risk of breast cancer	20-60%	10-20%
Risk of ovarian cancer	20-40%	10-20%
Age of onset	Late 30th ,early 40th yrs	59 yrs

Timing of Prophylactic Oophorectomy

- **1-The current thinking in UK is to :**
  - Discuss **Oophorectomy in ♀>40yrs .**
  - **Recommend it in ♀>45yrs .**
  - **Majority of gynecologists recommend removal of ovaries at time of hysterectomy around menopause.**

Timing of Prophylactic Oophorectomy

- **2- In high risk patient Oophorectomy must be done {depending on possible age of development of malignancy}:**
  - **BRCA1 carrier mutation: surgery at 35yrs old or when family is completed.**
  - **BRCA2 carrier mutation: surgery is delayed to near menopause.**

What to be removed during Prophylactic Oophorectomy?

- ***Risk Reducing Surgery in high risk patients.***

- ***At minimum:***
  - BSO+
  - Peritoneal washing cytology +
  - Random Peritoneal +
  - omental biopsies+
  - Sectioning tubes and ovaries for histopathological examination.
- ***At maximum:***
  - Hysterectomy is performed in addition .

Value Of Hysterectomy

- 1-↓Risk of tubal cancer {No residual fallopian tube}.
- 2-↓Risk of uterine cancer due to :
  - *Hyperestrogenic state.*
  - *Tamoxafen used for treatment of breast cancer.*
- 2-↓Risk of uterine papillary serous carcinoma that may be correlated with BRCA1 mutations.

Some authors suggested that removal of the uterus without ovaries may reduce risk of ovarian cancer why?

1-Surgical procedure allow surgeon to screen for malignancy.

2-Alteration of blood supply to ovaries.

3-No ascent of carcinogens from vagina.

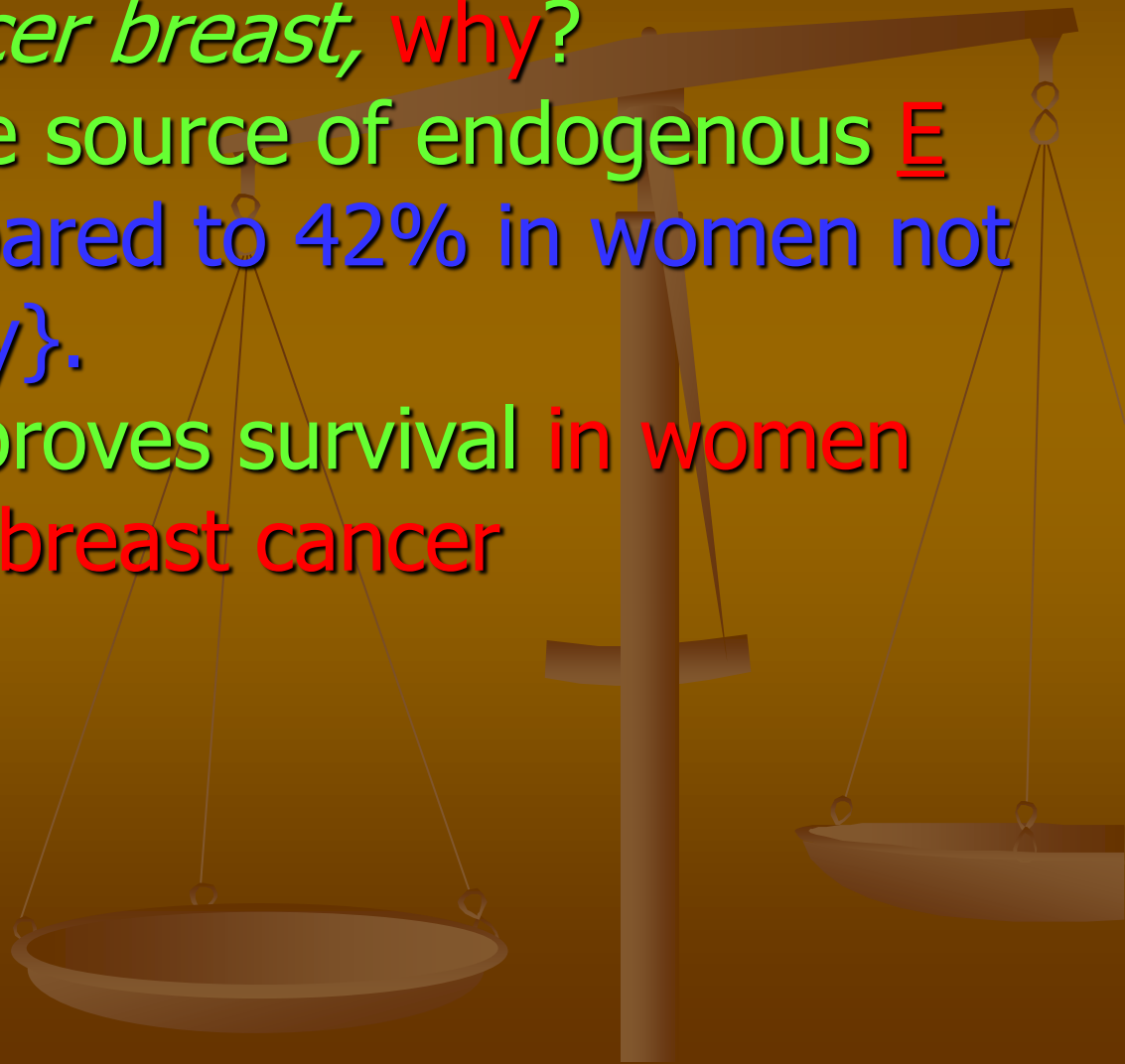
Risks And Benefits of
Prophylactic Oophorectomy

Benefits of Prophylactic Oophorectomy

- *1- ↓risk of development of cancer,* ovary, tube, and peritoneal cancer in BRCA mutation carrier.
- N.B: It has been suggested that, in the USA, approximately 1,000 cases of ovarian cancer can be prevented if prophylactic oophorectomy is practiced in all women older than 40 years of age who undergo hysterectomy.

Benefits of Prophylactic Oophorectomy

- 2- ↓ *risk of cancer breast,* why?
  By removing the source of endogenous E {↓TO21% compared to 42% in women not undergo surgery}.
  N.B: Also, it improves survival in women with diagnosed breast cancer

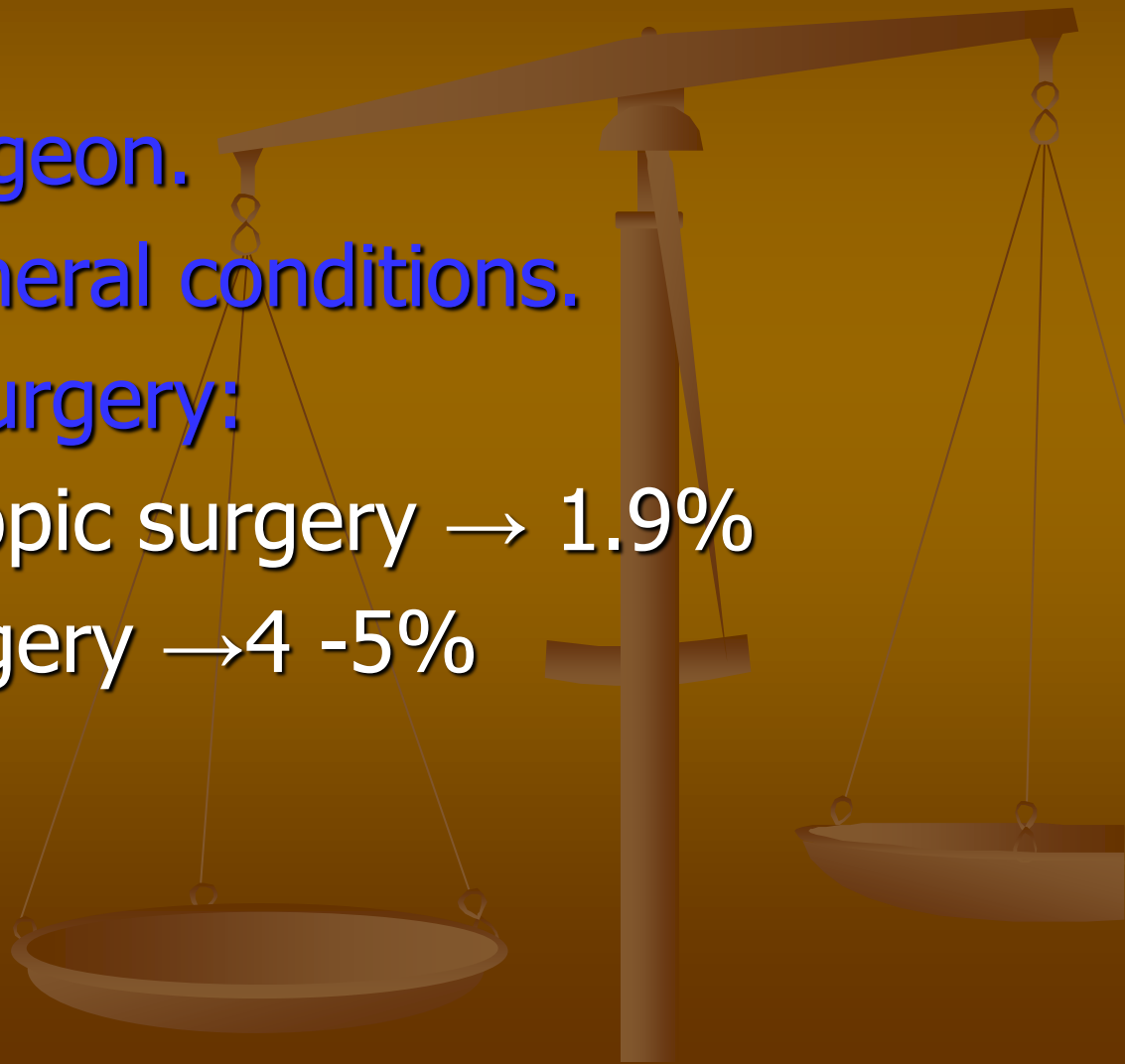


Risks Of Prophylactic Oophorectomy

- 1} Surgical Risk .
- 2} Risk of malignancy.
- 3} Risk Premature menopause.

1}*Surgical* Risk :

- Depends on:
  - 1- Skill of surgeon.
  - 2- Patient general conditions.
  - 3- Route of surgery:
    - - Laparoscopic surgery → 1.9%
    - - Open surgery →4 -5%



1}Surgical Risk :

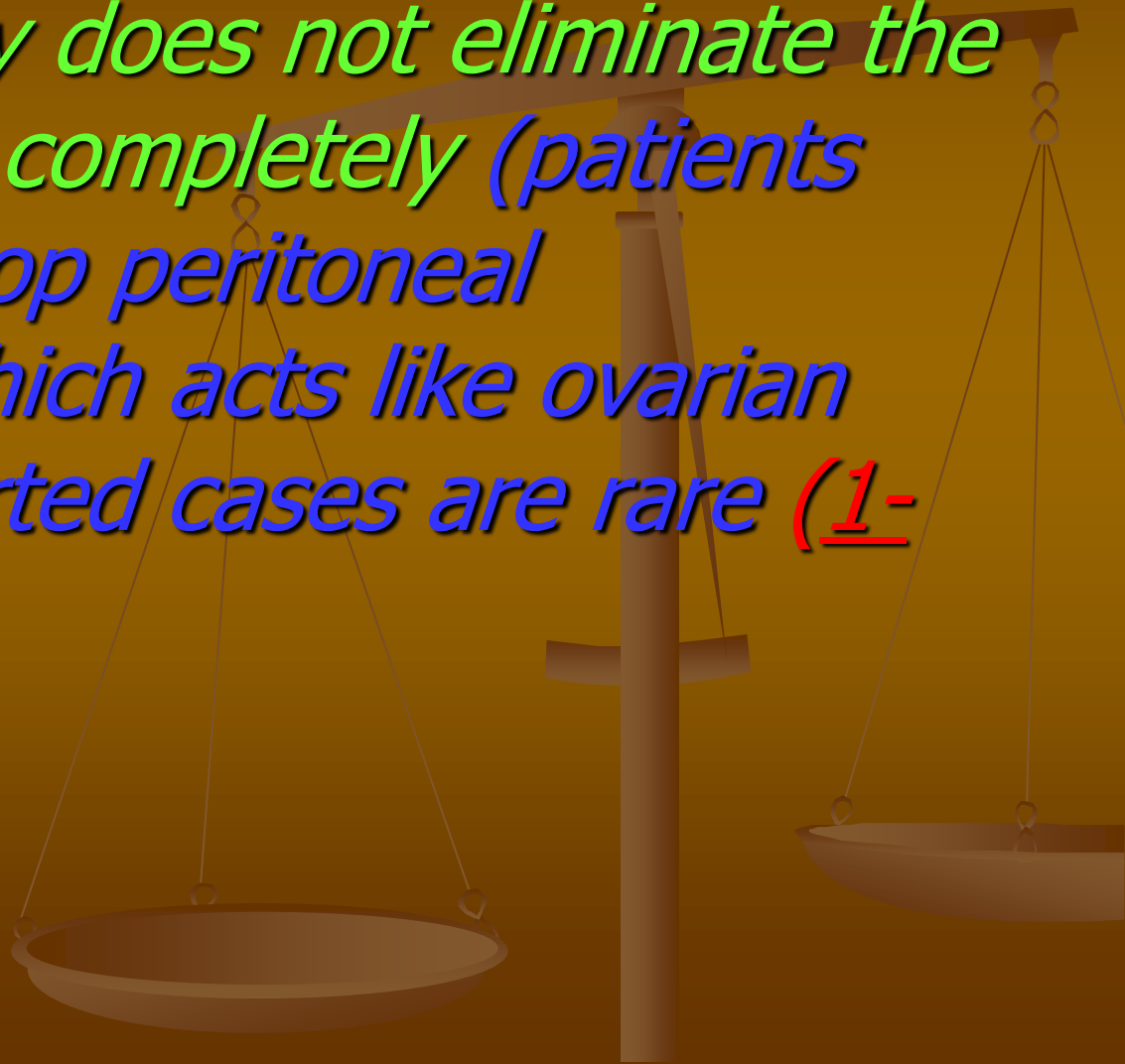
- 4 -Type of surgery:
  - **There are no studies evaluating increased operative risk or morbidity when prophylactic oophorectomy is included at the time of abdominal hysterectomy.**
  - **Retrospective studies looking when prophylactic oophorectomy is included at the time of vaginal hysterectomy have shown that the ovaries can be removed successfully in 65-97% of patients .**

1}Surgical Risk :

- One study found no significant increase in operating time, estimated blood loss, length of hospital stay, or postoperative morbidity between patients who had their ovaries removed and those who did not .
- Another study found that oophorectomy added 23.4 minutes to the total operating time compared with vaginal hysterectomy alone .

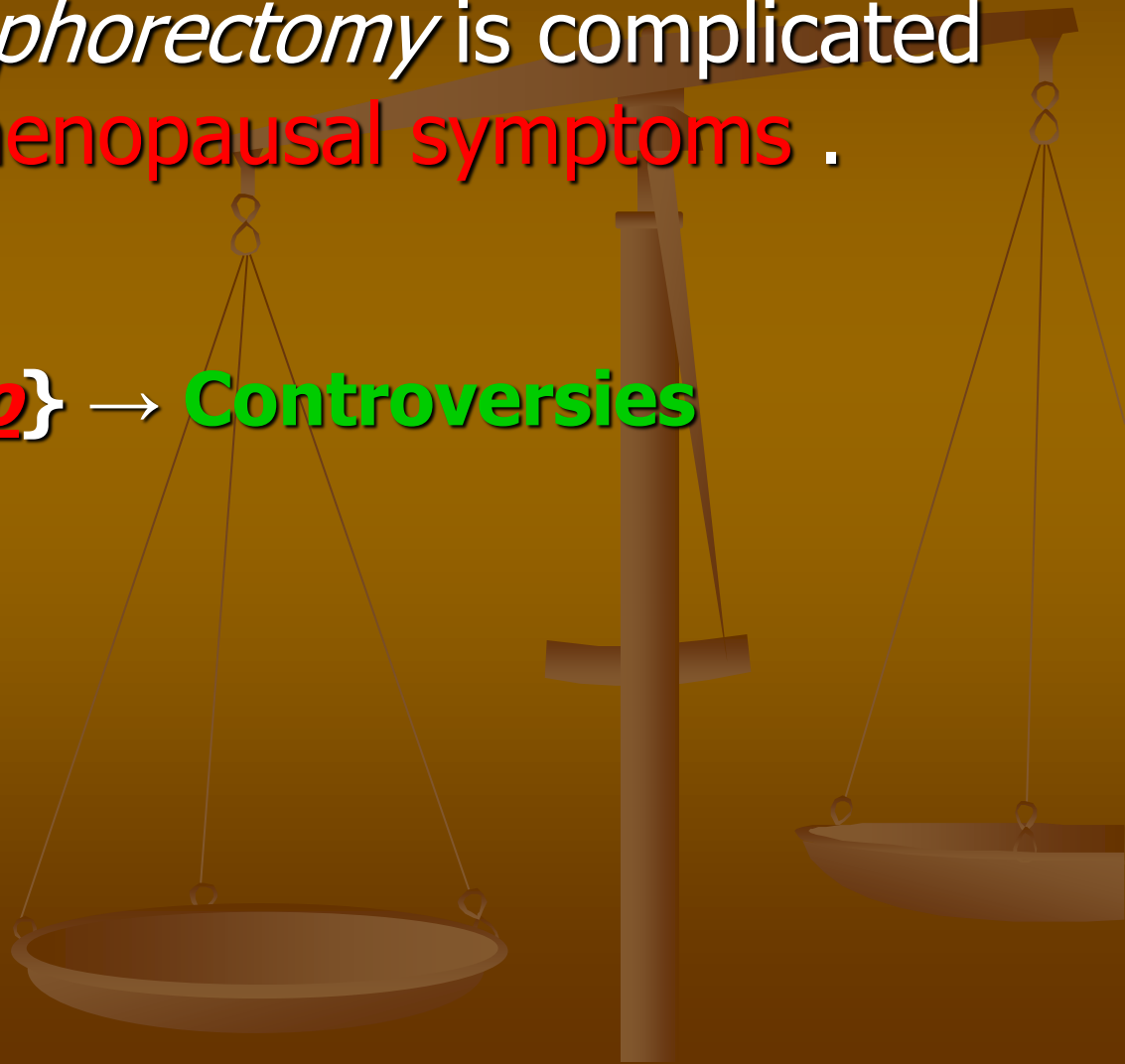
2} Risk of malignancy.

- *Oophorectomy does not eliminate the risk of cancer completely (patients still can develop peritoneal carcinoma, which acts like ovarian cancer), reported cases are rare (1-2%).*



3} Risk Of Premature menopause.

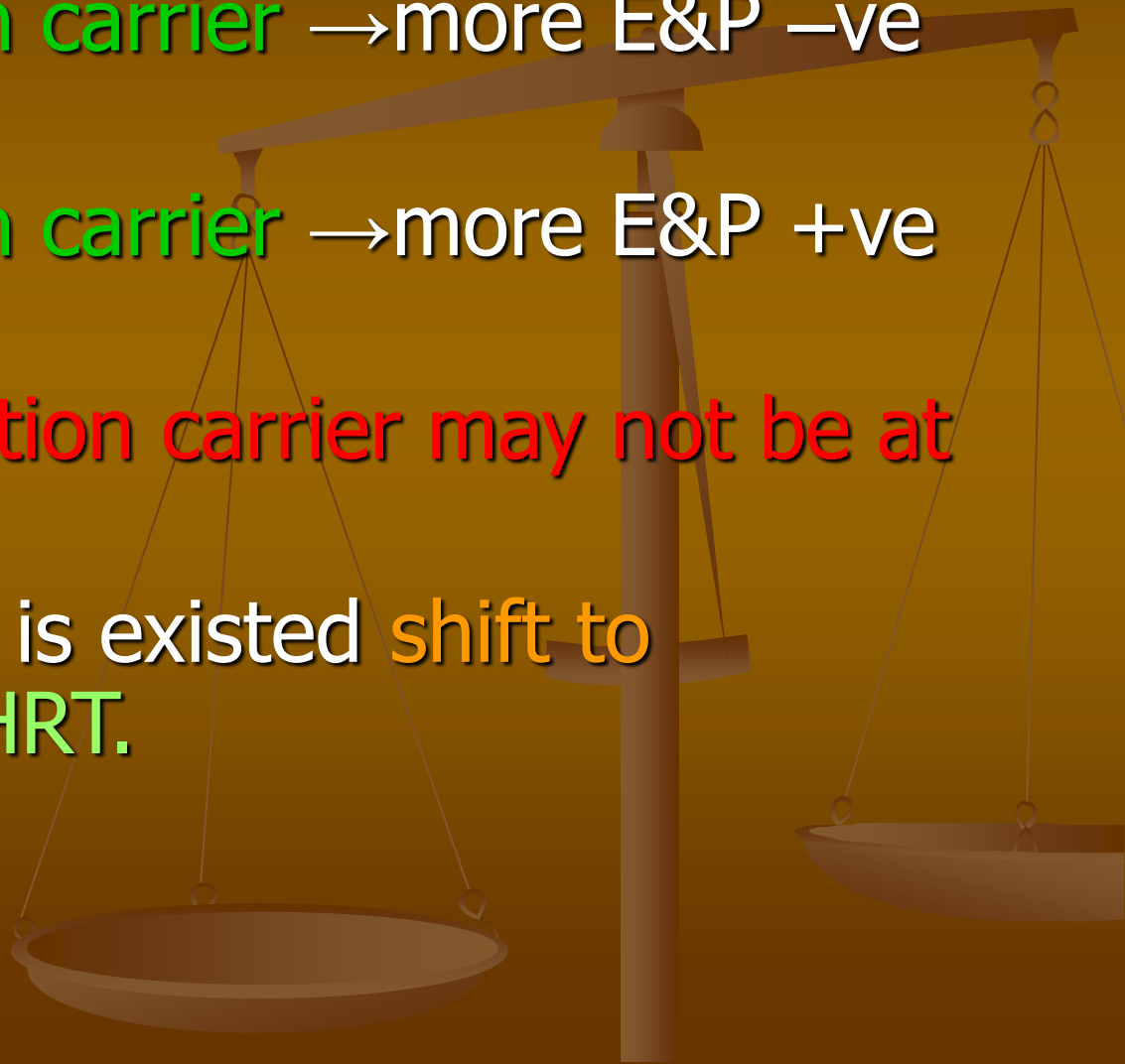
- *Prophylactic Oophorectomy* is complicated by Premature menopausal symptoms .
- HRT
  - { ***Yes or, No***} → **Controversies**



HRT

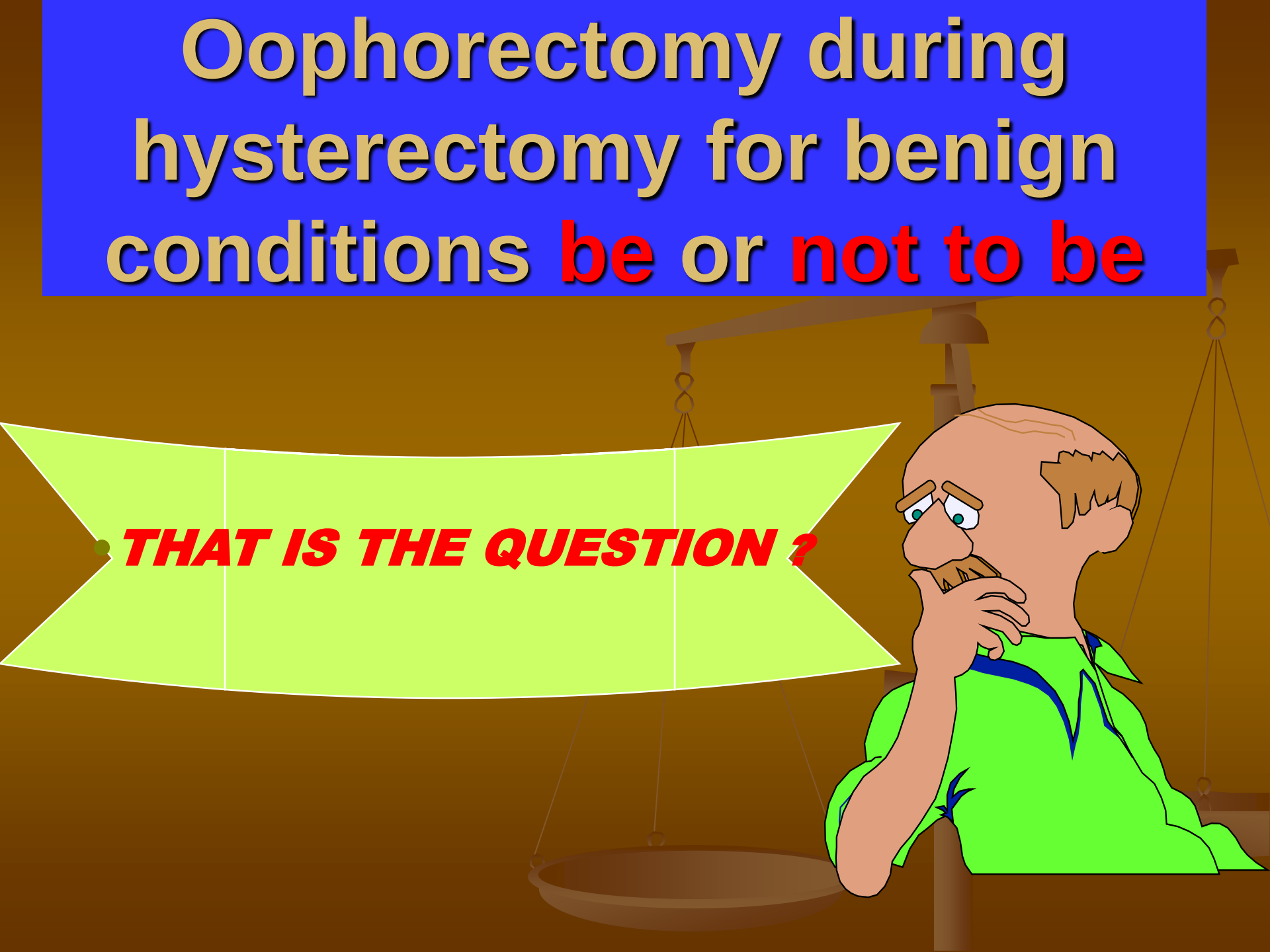
{ ***Yes or, No***}

- BRCA1 mutation carrier →more E&P –ve receptors.
- BRCA2 mutation carrier →more E&P +ve receptors.
- So BRCA1 mutation carrier may not be at ↑ risk with HRT.
- If risk with HRT is existed shift to alternatives to HRT.



Oophorectomy during hysterectomy for benign conditions be or not to be

THAT IS THE QUESTION ?



- 1- If ovaries are pathologically affected → Removal.
- 2- If ovaries are healthy → controversy .

Some authors advise ***preservation*** of the ovaries during hysterectomy WHY?

- 1-Postmenopusal ovary still a functioning organ i.e main source of postmenopausal androgen that can be converted peripherally into estrogen.
- **2-There is evidence that retained ovaries work normally following hysterectomy.**
- 3- Hysterectomy without Oophorectomy may reduce risk of ovarian cancer, why?

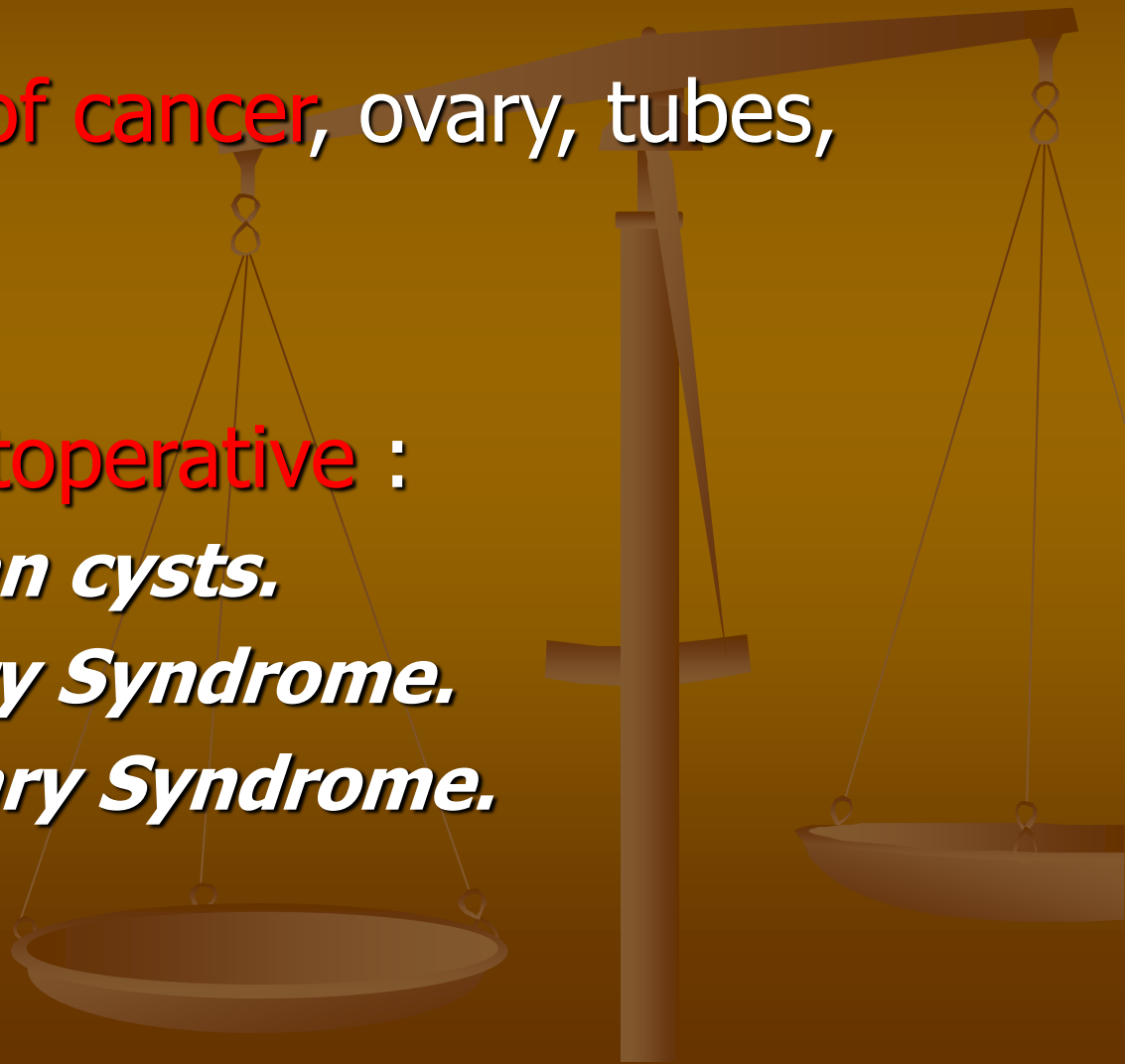
Some authors advise *preservation* of the ovaries during hysterectomy WHY?

- **4- Oophorectomy is associated with menopausal symptoms for which HRT is indicted .**
  HRT is not without risk.
- **5- Oophorectomy** does not eliminate the risk of cancer completely.
- 6- The prevalence of ovarian cancer is not so much to warrant **Oophorectomy in every case ????**

Some authors advise ***removal*** of the ovaries during hysterectomy WHY?

- 1-Minimize risk of cancer, ovary, tubes, and/ or breast.

- 2-No risk of postoperative :
  - ***Benign Ovarian cysts.***
  - ***Residual Ovary Syndrome.***
  - ***Remnant Ovary Syndrome.***



Some authors advise *removal* of the ovaries during hysterectomy WHY?

- ***3- We can use alternatives to HRT {Minimal risk}***

- ***4-Development of different methods of patient Surveillance***

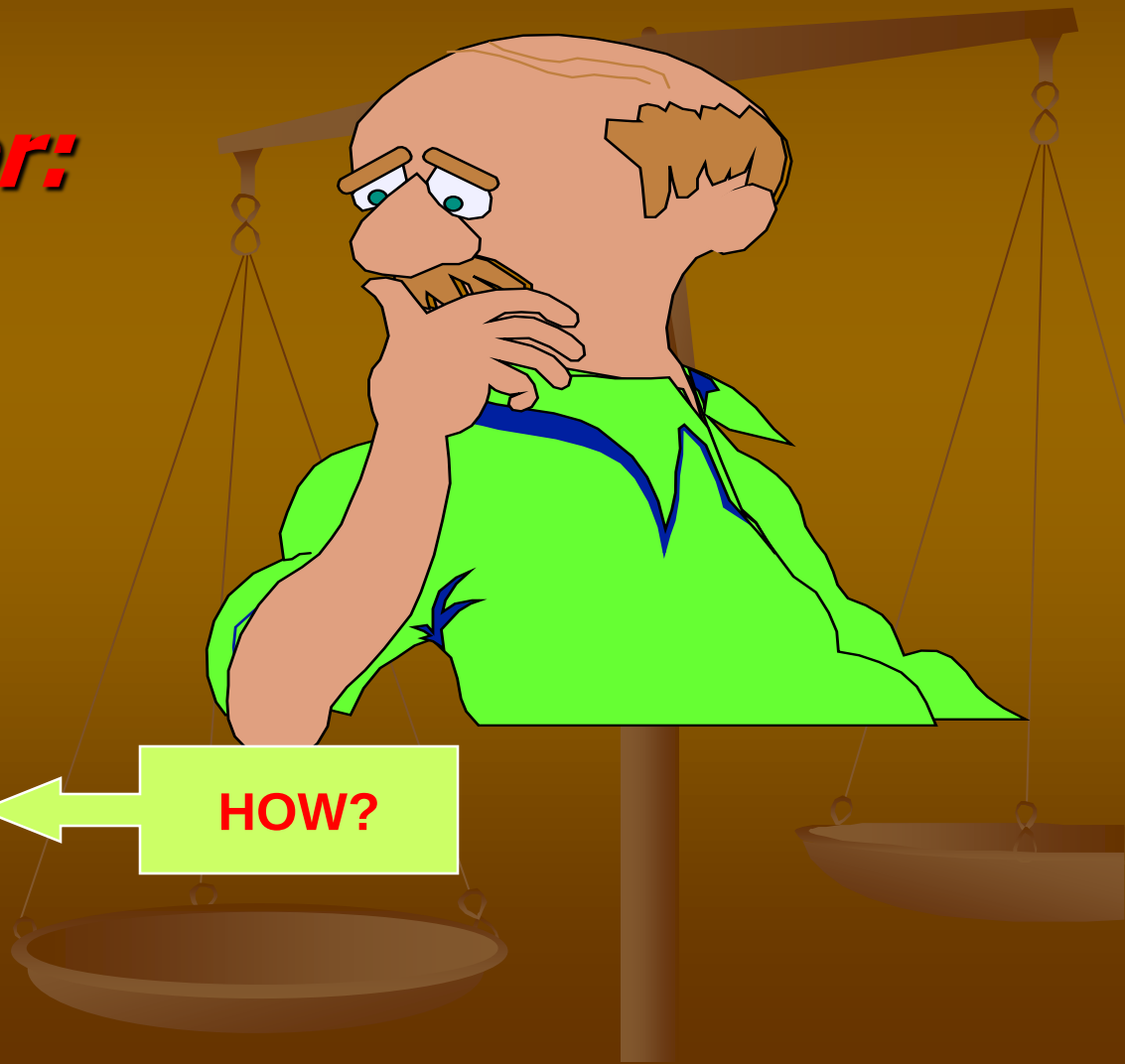
Surveillance

Indications of Surveillance

- ***Women at risk [Risk factors of Ovarian &Breast cancer] refuse to be undergone Prophylactic Oophorectomy***

Methods

- ***I } Proper screening for:***
  - *A- Cancer Ovary.*
  - *B- Cancer Breast.*



II} Therapeutic measures provide protection:

- 1-Tamoxifen: ↓ incidence of breast cancer 62% in women with BRCA2 mutation , BUT, has no such protective effects in those with BRCA1mutation carrier.

II} Therapeutic measures provide protection:

- 2- Combined oral contraceptives:
  - ***The risk of ovarian cancer :continues to ↓as years of use ↑, although there is little additional protection conferred by oral contraceptives beyond 6 years of use.***
  - ***The risk of breast cancer: No ↑.***

II} Therapeutic measures provide protection:

- 3-Tubal ligation:
  - **In general population→↓ risk of ovarian cancer.**
  - **In BRCA1, not in BRCA2 mutation carrier→↓ risk of ovarian cancer.**
- 4- The protective benefits of higher parity, as well as longer duration of breastfeeding why?
  - **Suppress ovulation.**
  - **↓ Local E on breast.**

II} Therapeutic measures provide protection:

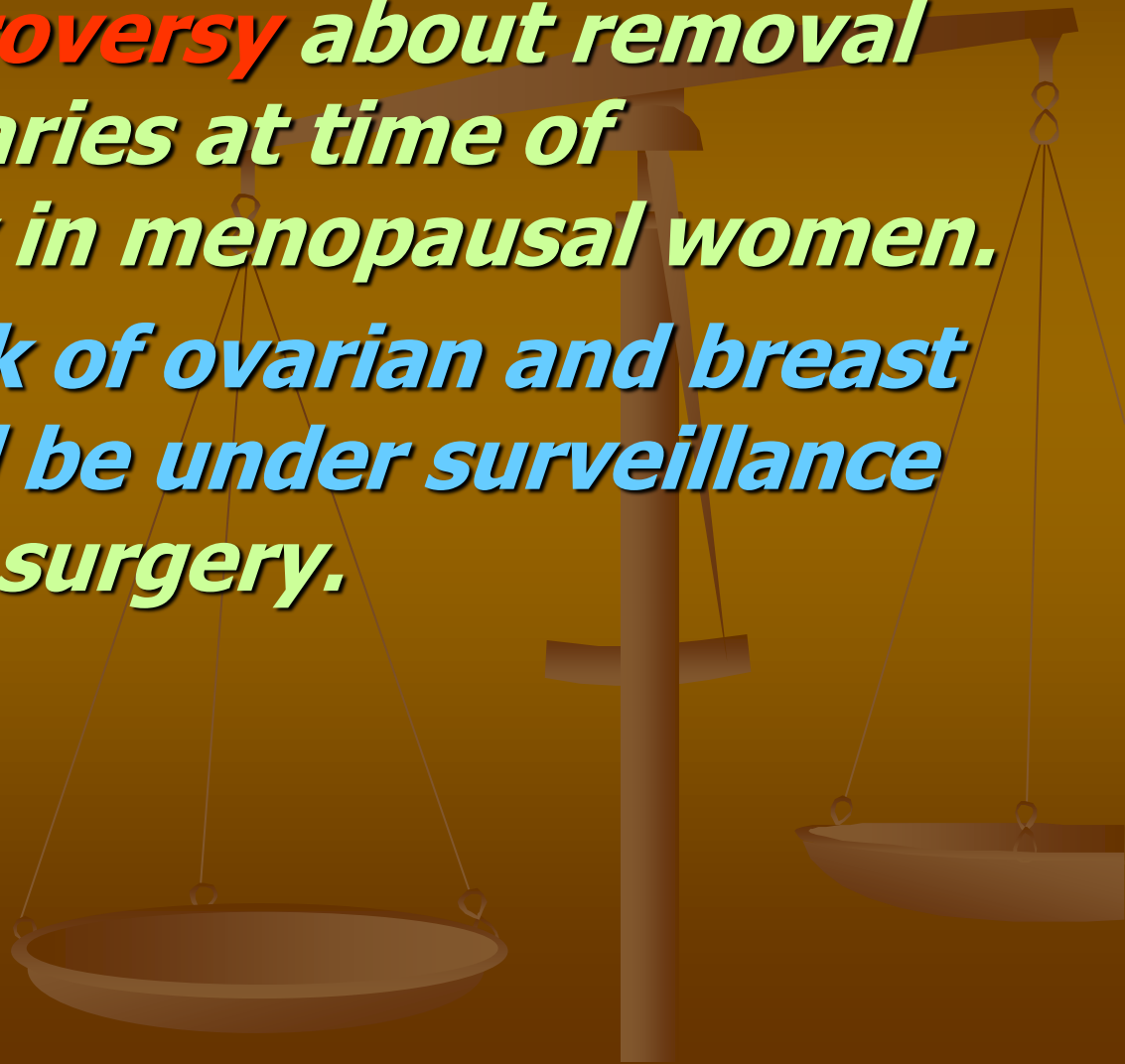
- 5- Pregnancy: encouraged. Delayed childbearing → remove the protective benefits against ovarian &breast cancer.

CONCLUSION

- *Prophylactic Oophorectomy is indicated in patient with risk factors for ovarian and/or cancer.*
- *Prophylactic Oophorectomy doesn't eliminate risk of cancer completely as it may be associated with primary peritoneal cancer that may be similar to ovarian cancer.*
- *Prophylactic Oophorectomy may be associated with risks and benefits.*

CONCLUSION

- There is controversy about removal of healthy ovaries at time of hysterectomy in menopausal women.
- Women at risk of ovarian and breast cancer should be under surveillance if they refuse surgery.



Thank you

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