

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
الْحَمْدُ لِلَّهِ الَّذِي  
خَلَقَ السَّمَوَاتِ وَالْأَرْضَ  
وَالَّذِي يُضَوِّتُ النَّجْمَ  
وَالَّذِي يُنَزِّلُ الْمَطَرَ  
وَالَّذِي يُغْنِي عَنْكُمْ  
الْأَرْضَ وَهُوَ يُعْطِيكُمُ  
الْحَيَاةَ وَهُوَ يُمْرِئُكُمْ  
وَالَّذِي يُقِيمُ السَّاعَاتِ  
وَالَّذِي يُنْزِلُ الْوَيْلَ  
وَالَّذِي يُنْزِلُ الْوَيْلَ  
وَالَّذِي يُنْزِلُ الْوَيْلَ





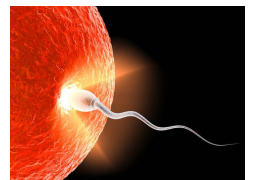
# Infertility

***Farahnaz Sadat Ahmadi***

***MD.MPH.MBA***

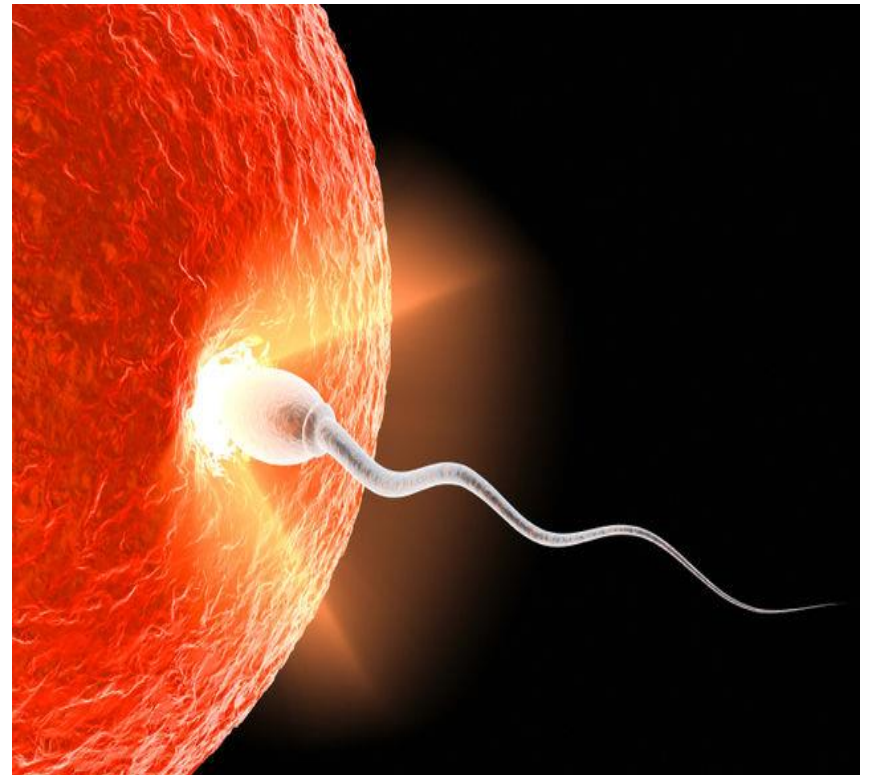
***Obstetric&Gynecologist***

***Felloship OF Infertility***



# ***CONTENTS***

- **Introduction**
- **Definition**
- **Classification**
- **Medical history**
- **Examination of couple**
- **Factors and aetiologies**
- **Refer**
- **Investigation**
- **Management**
- **Conclusion**



# Introduction

- Average incidence of infertility is about
  - **15%** globally varies in different populations.
- 
- Unexplained infertility constitutes
  - **10%** of all cases.



# Definition

**One year** of **unprotected intercourse without conception.**

**If women > 35 years of age : six months** of **unprotected intercourse without conception.**



# Classification

## **PRIMARY –**

Couple without a prior pregnancy.

## **SECONDARY –**

Couple with previous pregnancy  
including miscarriage/ectopic.



# Medical history

- **History taking (female)**
  - frequency of intercourse
  - menstrual history: irregularities
  - surgical history: abdominal / pelvic surgery
  - history of weight changes,
  - hirsutism and acne
  - contraception :IUCDs
  - symptoms (past or present) : STD , galactorrhea, thyroid symptoms
  - obstetric history





# Pregnancy Course:

## summary of recent reports

- 90% result in successful delivery
  - High incidence of twins
- 7% had a spontaneous miscarriage
- 65-75% required hormone induced ovulation
- 60-70% were delivered by Cesarean section
- ~25-30% born premature (30-36 wks)
- Mean Hb kept at 10 g/dL
- Ferritin increased <1000





# Medical history



## History taking (male)

- Genital tract infection : mumps. Orchitis, prostatitis
- History of impotence, premature ejaculation, change in libido,
- Surgical history of testicular torsion, undescended or maldescended testis, prostate surgery, hernia repair

-

**Trauma: genital or inguinal region**

**-Exposure to lead, cadmium, mercury**

**-Drug history:**

**Sulphasalazine 'impairs spermatogenesis'**

**Phenothiazine/ antipsychotics/metoclopramide  
'increase prolactin levels'**

**Immunosuppresants**



# Medical history

## In both

- Smoking
- Alcohol intake
- Psychological factors



# Examination for infertility (female)

- blood pressure, pulse, and temperature
- Body mass index BMI: **<19 OR > 30**

- **Head and neck assessment:**

Exophthalmos (hyperthyroidism)

Epicanthus, lower implantation of ears and hairline, and webbed neck (chromosomal abnormalities)

Exclude thyroid gland enlargement/nodules (thyroid dysfunction )



- **Breast evaluation:**

- Assess breast development
- abnormal masses or secretions, especially *galactorrhea*

- **Abdominal evaluation:**

- abnormal *masses*

- **Speculum examination:**

- Obtain a Papanicolaou test and cultures for gonorrhea, chlamydia.
- assess for cervical stenosis.

## **Bimanual examination:**

- Establish direction of the cervix + size/position of the uterus to exclude the presence of uterine fibroids, adnexal masses
- Tenderness, or pelvic nodules.
- Assess for defects (absence of vagina and uterus, vaginal septum)

## **Extremities evaluation:**

- Exclude malformation (cubitus valgus), which can indicate chromosomal abnormalities and other congenital defects

## **Dermatologic evaluation:**

- Assess for the presence of acne or hirsutism.



# Examination for infertility (male)

## *General examination:*

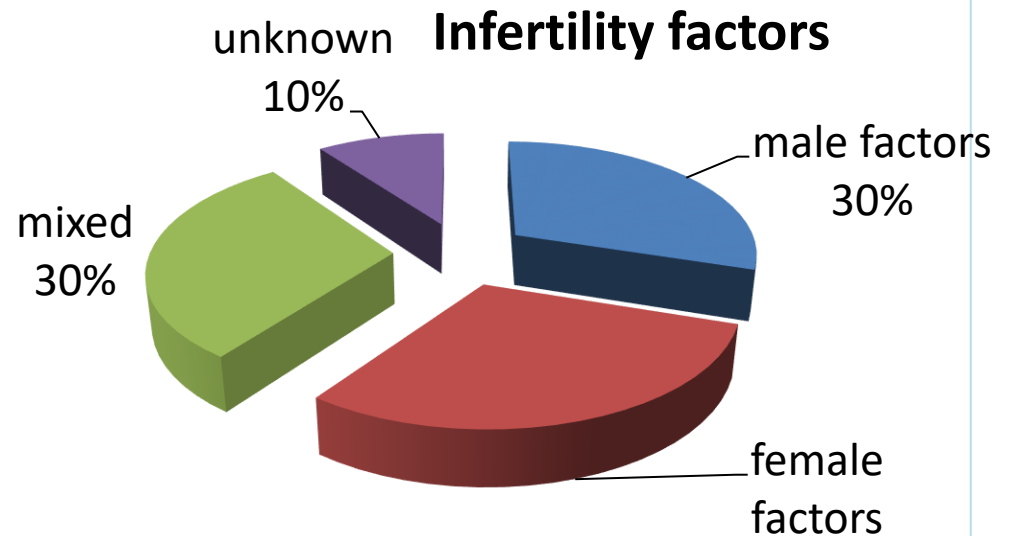
- Blood pressure, pulse, and temperature
- Body mass index BMI: **> 30**
- Secondary sexual character

## *Local examination:*

- Hypospadias
- Size and consistency of each testicle, epididymis and prostate
- Presence of varicocele or hernia
- Gynaecomastia

# Infertility factors

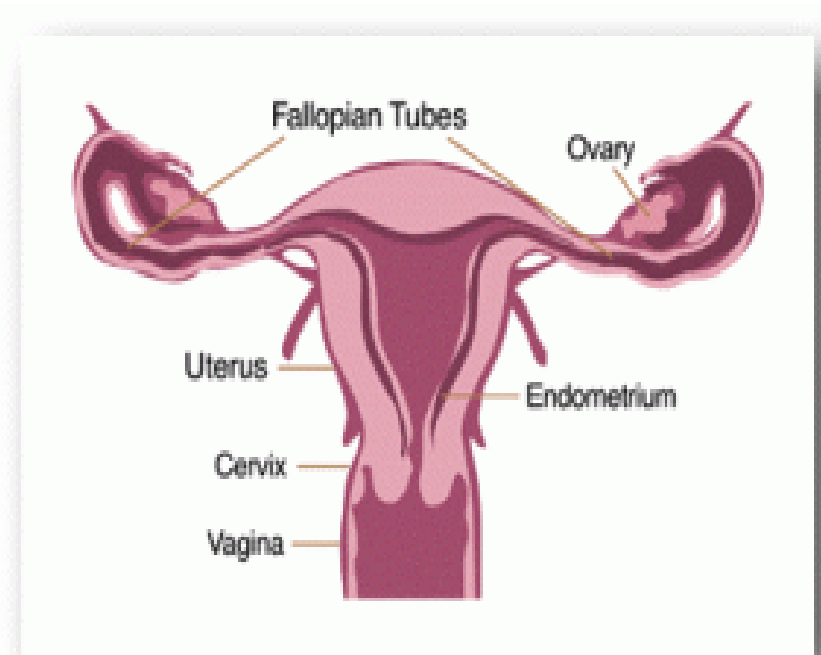
- **Female factors 30%**
- **Male factors 30%**
- **Mixed 30%**
- **Unexplained 10%**





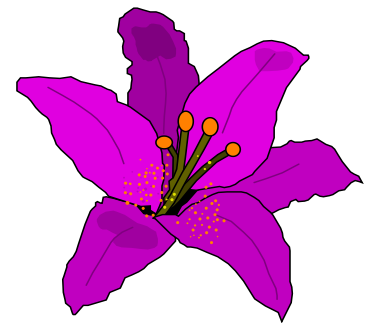
# Female factors

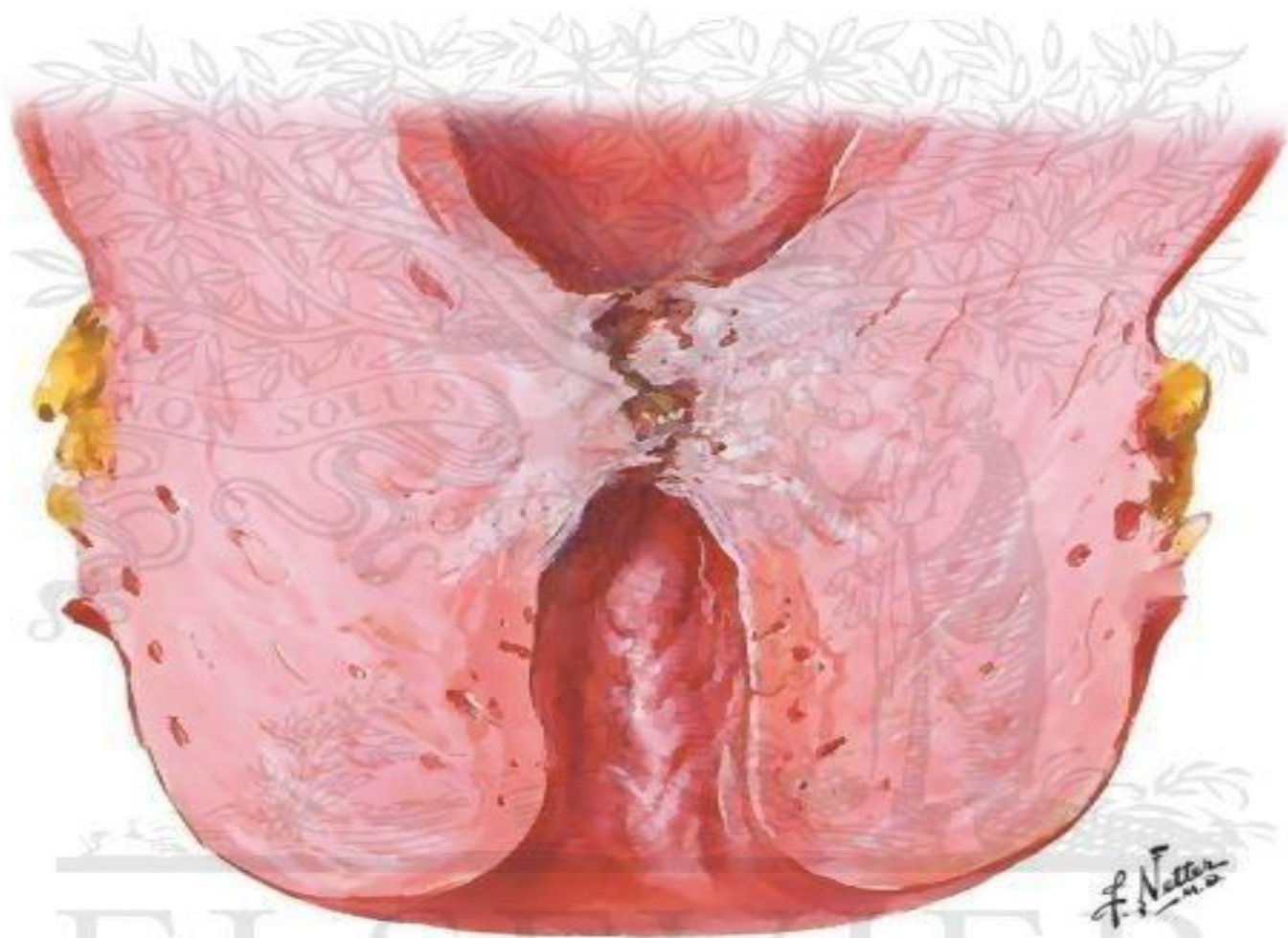
- **1-Cervical 10%**
- **2-Uterine 15%**
- **3-Tubal 25%**
- **4-Ovarian 40%**
- **5-Peritoneal 10%**

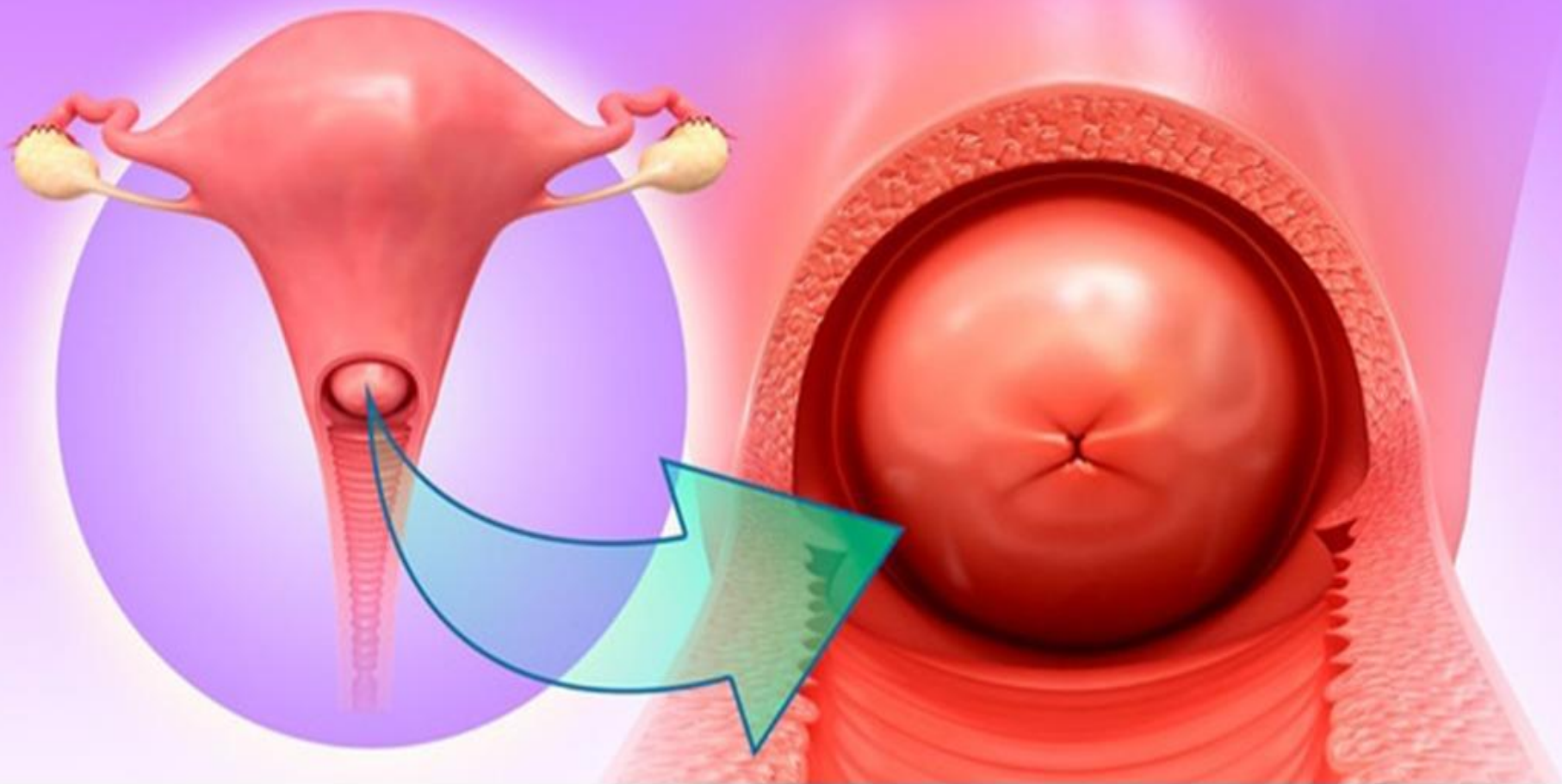


# Female factors

- **1-Cervical:**
  - Stenosis or abnormalities of the mucus-sperm interaction
  - Infection
  - Female sperm antibodies







# **4 PROBLEMS OF THE CERVIX THAT CAN AFFECT FERTILITY**



## • 2-Uterine:

- Congenital or
- acquired defects;
- may affect endometrium or myometrium.

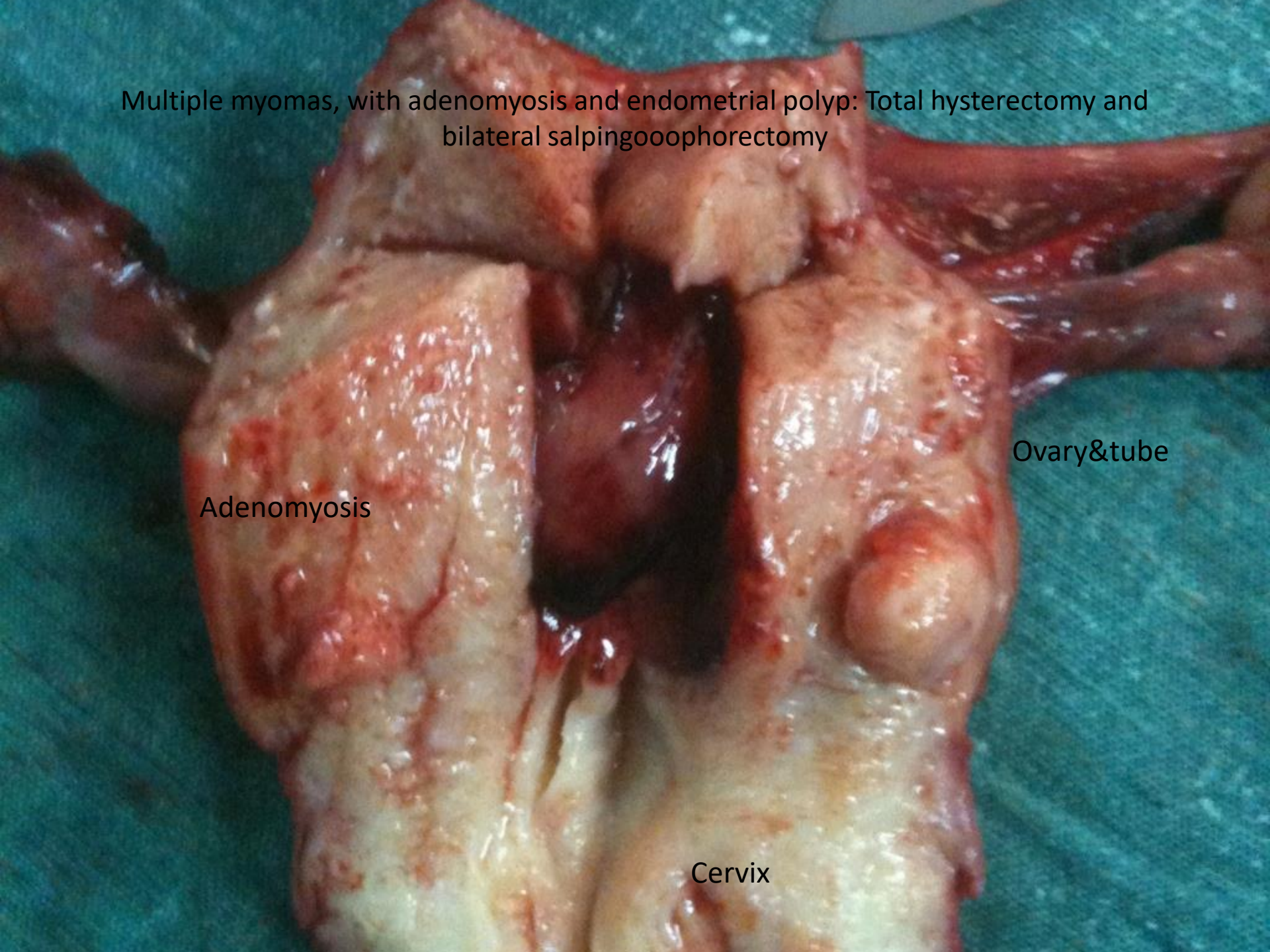


Multiple myomas, with adenomyosis and endometrial polyp: Total hysterectomy and bilateral salpingoophorectomy

Adenomyosis

Ovary&tube

Cervix

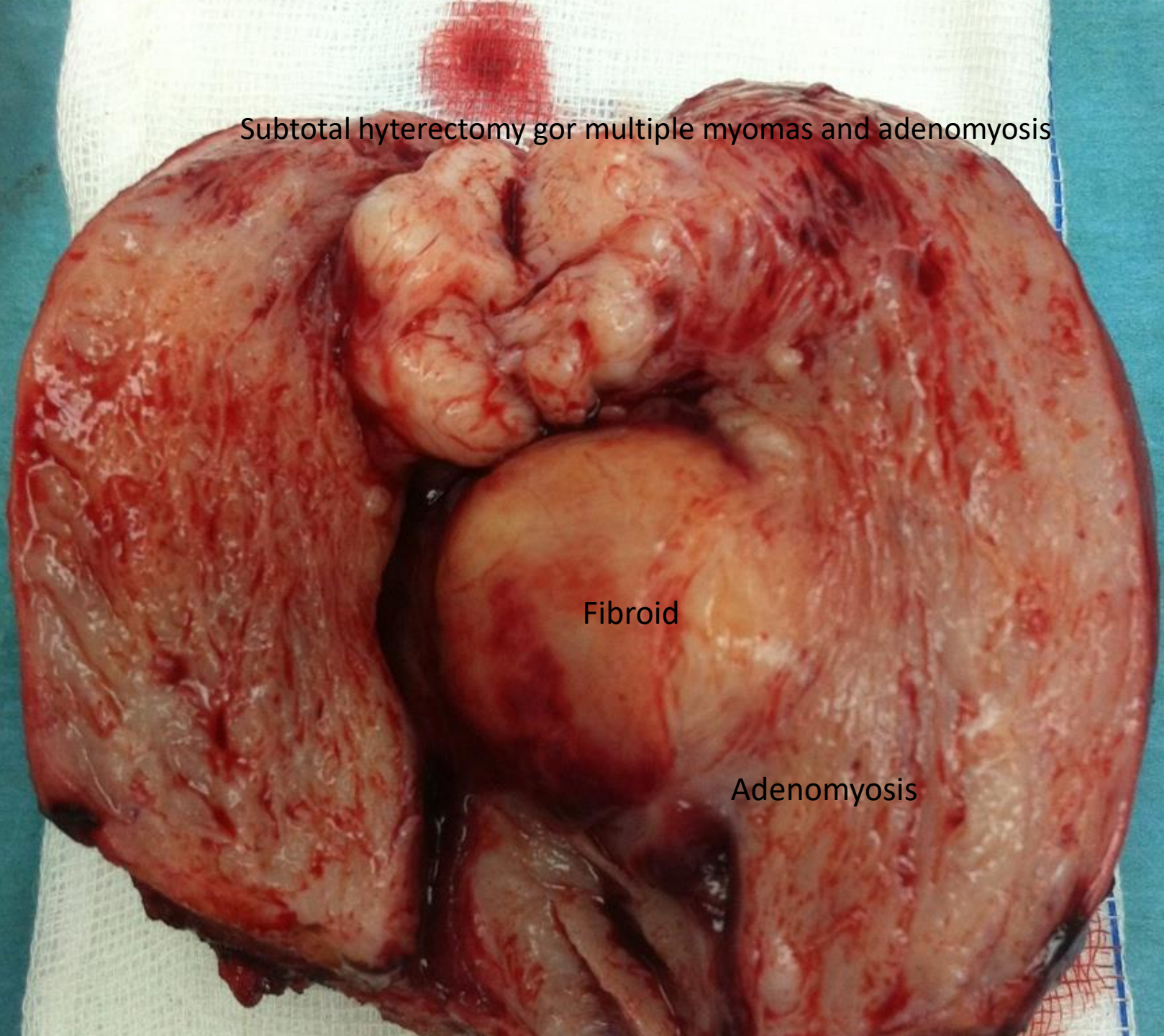




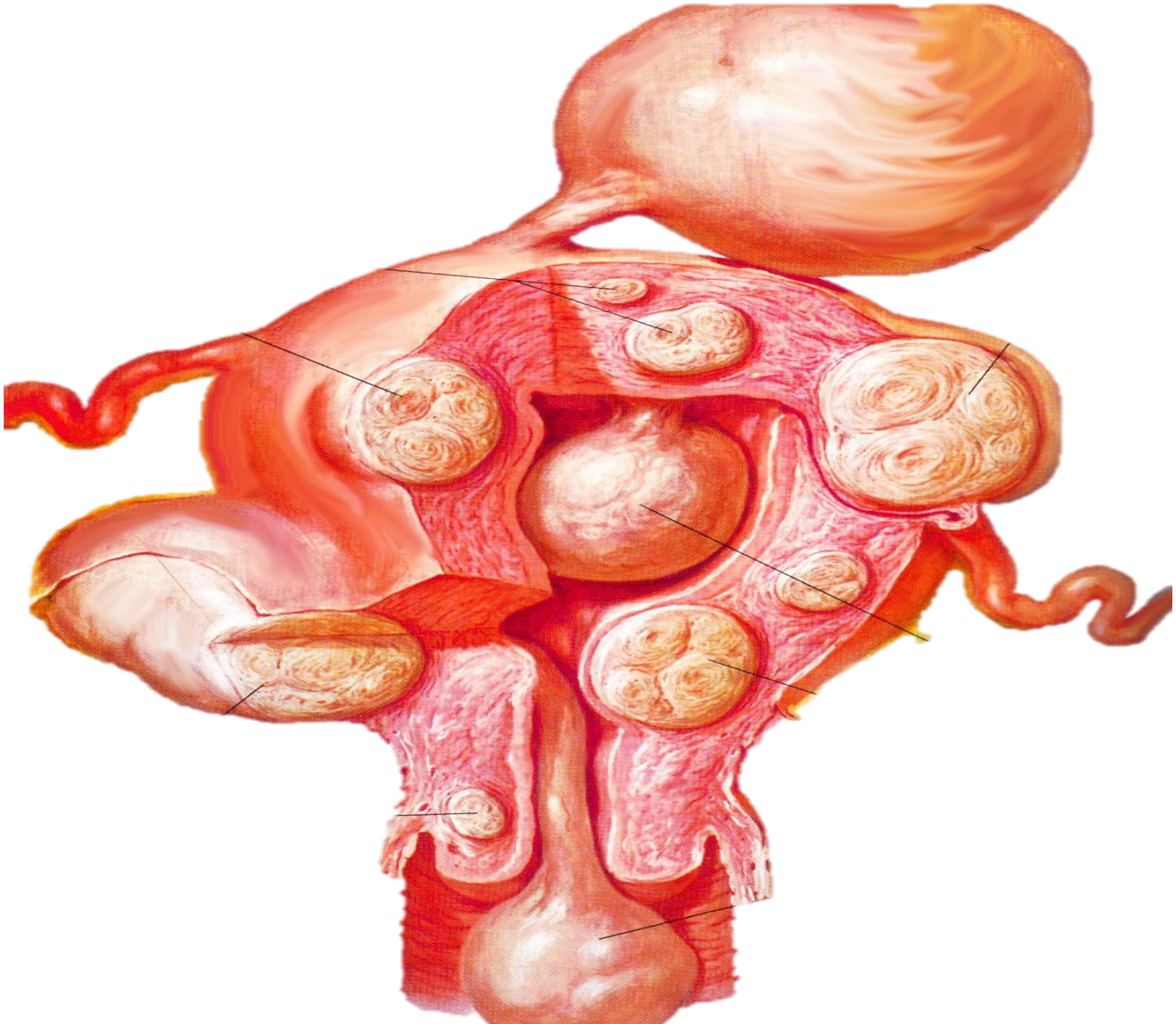
Subtotal hysterectomy for multiple myomas and adenomyosis

Fibroid

Adenomyosis









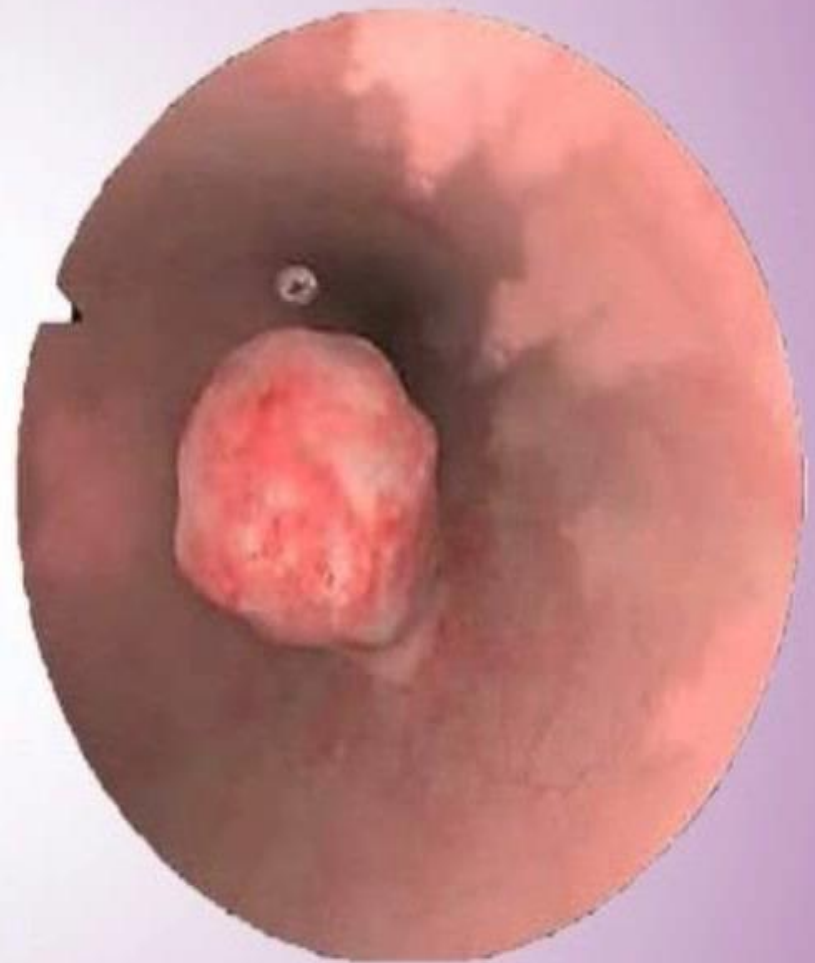
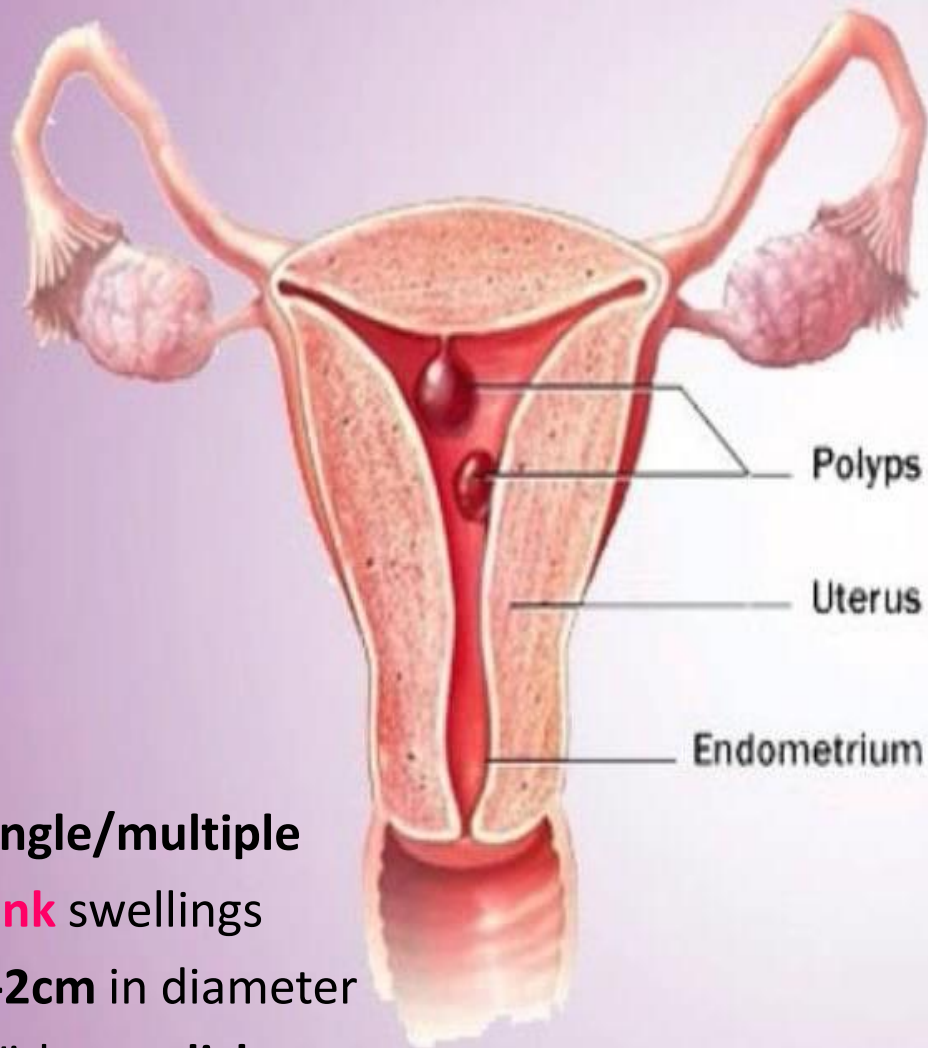
## Uterine Polyps



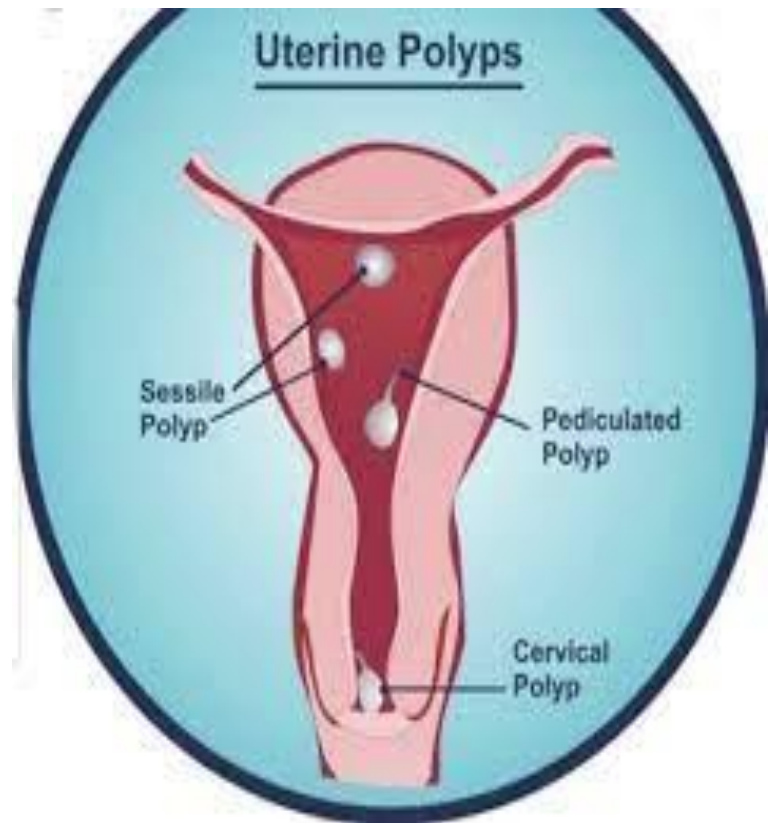
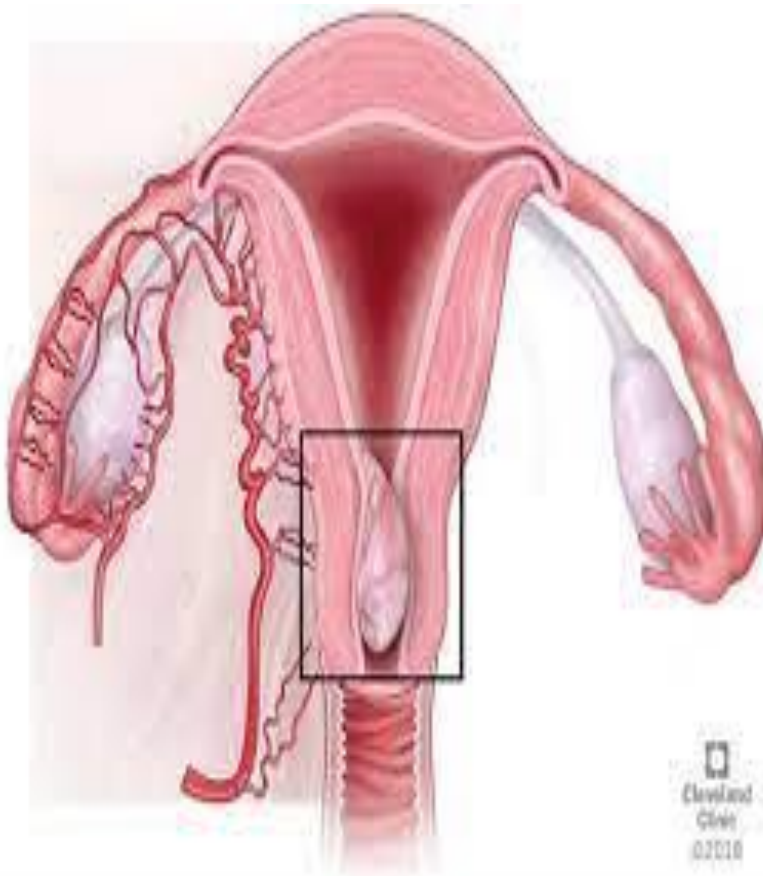
# Endometrial polyp



- Mostly arises from **hyperplasia of endometrium**.
- *Some of the endometrial lining **protruding into the uterine cavity as polyps**.*
- Composed of **endometrial glands and stroma** covered with a single layer of columnar epithelium .
- Secondary malignant change may occur .



- **Single/multiple**
- **Pink** swellings
- **1-2cm** in diameter
- With a **pedicle**





# Clinical features of polyp

- **Menorrhagia**
- **Metrorrhagia**
- **Postmenopausal bleeding**
- **Postcoital bleeding** (if it protrudes through the os)

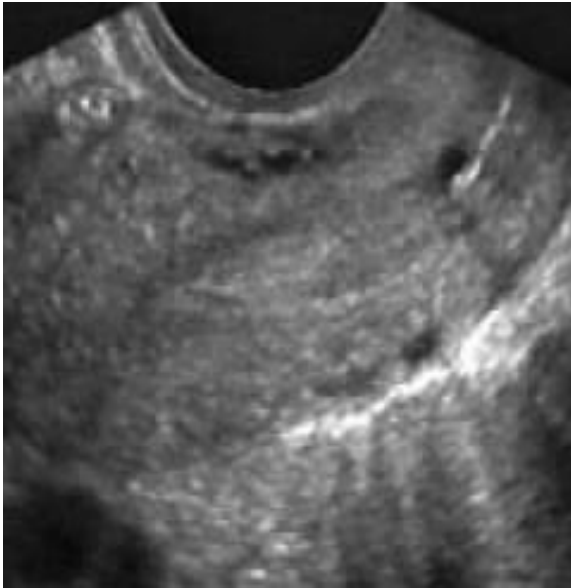




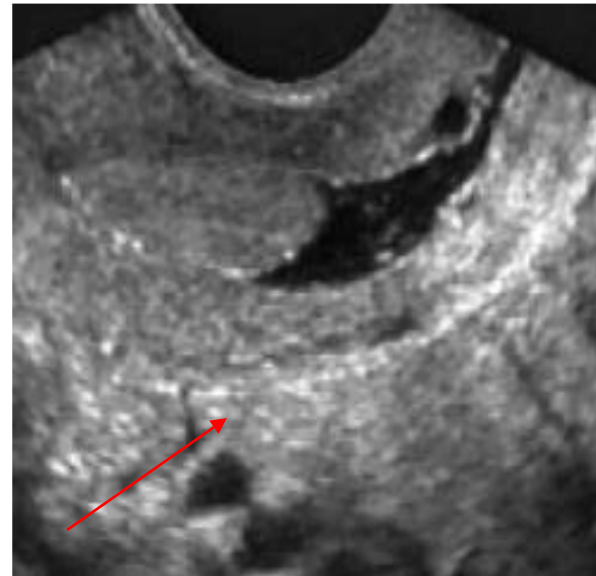


- Clinically, uterine polyp may not be evident and *uterus may or may not be enlarged*
- It is *easy to diagnose when the polypus protrudes through the cervical canal*
- **Ultrasound** can detect the uterine polyp
- **Saline sonosalphingogram/hysterosalphingogram**

# Findings - Polyp



TV US for abnormal bleeding revealed an ill-defined mass



SIS demonstrates fundal polyp

# ***Management***

- **D&C** can scrape the polyp
- **Hysteroscopic removal** of multiple polyps may be desirable to ensure their complete removal.




- **UTERUS ABNORMALITY**











Müllerian agenesis

This diagram illustrates Müllerian agenesis, showing a uterus that is severely underdeveloped and lacks fallopian tubes. The external genitalia appear normal.



Septum

This diagram illustrates a septate uterus, where a vertical septum divides the uterine cavity into two chambers. Fallopian tubes are present on both sides.




Arcuate

This diagram illustrates an arcuate uterus, which is a mild form of septate uterus where the septum is thin and does not significantly divide the uterine cavity. Fallopian tubes are present on both sides.




Unicornue

This diagram illustrates a unicornuate uterus, where only one fallopian tube and one half of the uterus are developed. The other half is absent.



Bicornue

This diagram illustrates a bicornuate uterus, where the uterus is divided into two horns at the fundus. Fallopian tubes are present on both sides.



Didelpho

This diagram illustrates didelphys, a condition where there are two separate uteri, each with its own fallopian tube and cervix.

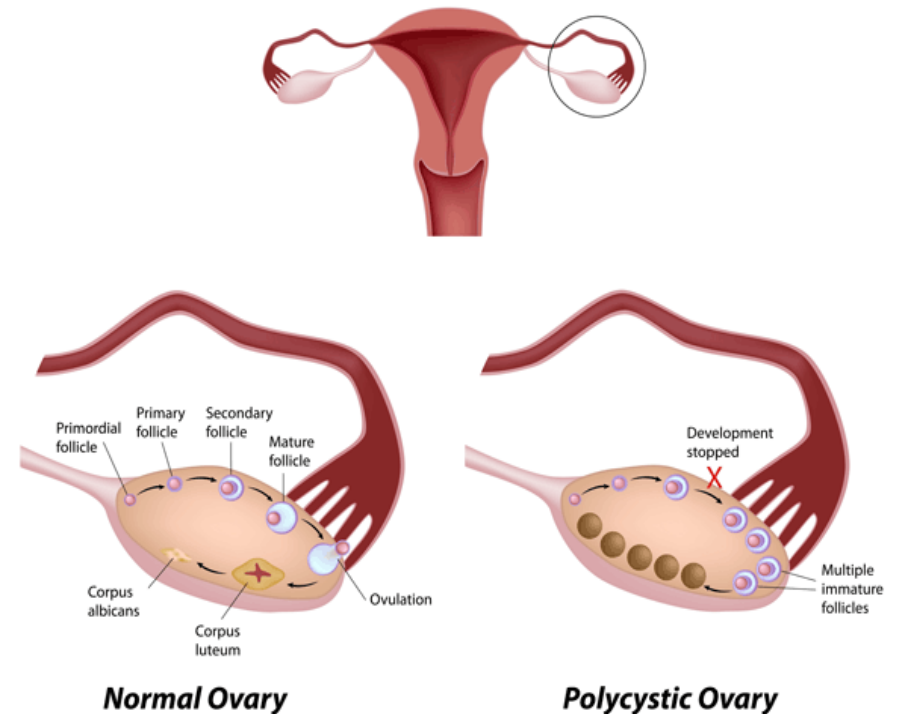


- **3-Ovarian:**

- Alteration in the frequency and duration of the menstrual cycle — Failure to ovulate is the most common infertility problem +++.

## Polycystic ovary syndrome (PCOS)

high levels of androgens (male hormones)



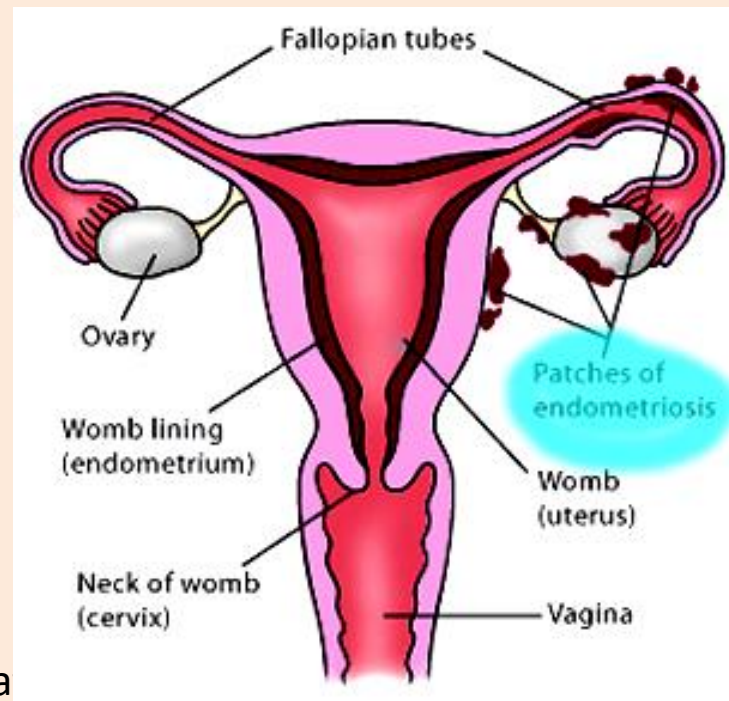
Ovulation disorders can be classified into:

- Annovulation i.e. lack of ovulation**
- Oligoovulation i.e. infrequent ovulation**
- Luteal phase defects**

- **4-Tubal:** Abnormalities or damage to the fallopian tube.

Congenital or acquired.

- **Infection** : STD such as **chlamydia** and **gonorrhoea**.
- **Surgery**: Any surgery can cause **adhesions**.
- **Congenital abnormality** such as an **absent maldeveloped** tube.
- **Endometriosis** is defined as the presence of endometrial tissue outside the uterus. It is an estrogen-dependent condition



- **Hydrosalpinx** Hydrosalpinx is a blocked, dilated fallopian tube caused by a previous pelvic infection.

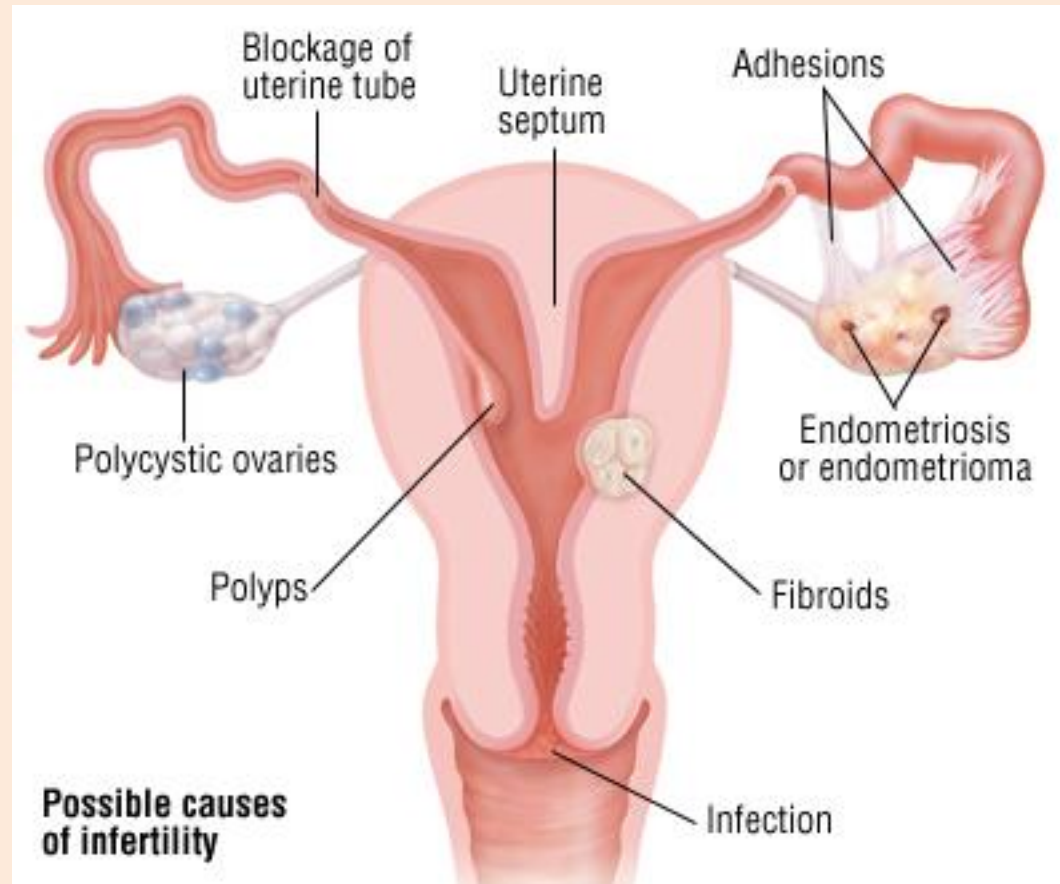
- **5-Peritoneal:**

Anatomic defects or physiologic dysfunctions

infection

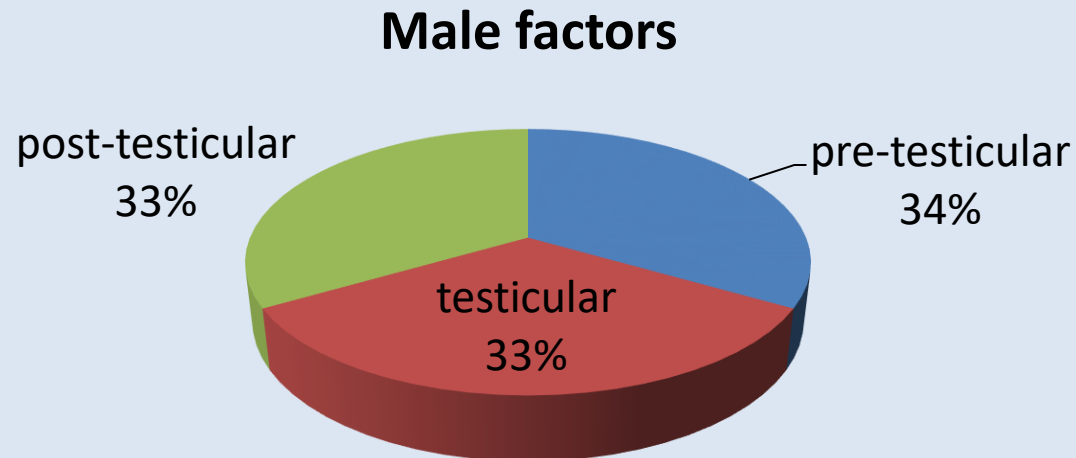
adhesions

adnexal masses



# Male factors

- 1-Pre-testicular
- 2-Testicular
- 3-Post-testicular



# Causes of Male Infertility

## PRETESTICULAR

- **Hypothalamic Diseases**

- Gonadotropin deficiency (Kallmann Syndrome)
- Isolated LH deficiency (Fertile eunuch)
- Isolated FSH deficiency
- Congenital Hypogonadotropic Syndrome

- **Pituitary Diseases**

- Pituitary Insufficiency (tumors, infiltrative processes, operation, radiation, deposits)
- Hyperprolactinemia
- Exogenous or Endogenous hormones (Estrogen-Androgen excess, Glucocorticoid excess, hyper- and hypothyroidism)

### **3. Growth hormone deficiency**

# Causes of Male Infertility

## TESTICULAR

- **Chromosomal Causes**
  - Klinefelter Syndrome
  - XX Sex Reversal
  - XYY Syndrome
- **Noonas Syndrome** (Male Turner Syndrome)
- **Gonadotoxins**
  - Radiation, Drugs
- **Systemic Disease**
  - Renal Failure, Liver Cirrhosis, Sickle Cell Disease
- **Defective Androgen Activity**
  - 5 $\alpha$ -reductase deficiency, androgen receptor deficiency
- **Testis Injury**
  - Orchitis, Torsion, Trauma
- **Cryptorchidism**
- **Varicocele**
- **Idiopathic**



# Causes of Male Infertility

## POST-TESTICULAR

### Reproductive tract obstruction

- **CONGENITAL BLOCKAGES**

- Cystic fibrosis

- **ACQUIRED BLOCKAGES**

- Vasectomy

- Groin and hernia surgery

- Bacterial infections

- **FUNCTIONAL BLOCKAGES**

- Sympathetic nerve injury

- Pharmacologic

### Disorders of sperm function or motility

### Disorders of coitus

- Impotence

- Hypospadias



## Male infertility can be classified into 2 main types:

### → Quantity problem:

No sperm (**azoospermia**) and poor sperm quantity (**oligospermia**)

### → Quality problem:

Poor sperm quality :low motility (**asthenozoospermia**) or a high percentage of abnormal sperm (**teratozoospermia**).

OR

### → Obstruction problem

### → Production problem

# Mixed factors

→ **Factors that affect the fertility of both sexes include the following:**

- Environmental
- Toxic effects related to tobacco, marijuana, or other drugs
- Excessive exercise
- Inadequate diet associated with extreme weight loss or gain
- Advanced age
- Immunological infertility
- Coital failure

Now what??

- Investigate

Or

- Refer

# Early refer if..

- **Female:**

- Age > 35yrs
- Amenorrhoea / Oligomenorrhoea
- Abnormal pelvic exam
- PID (pelvic inflammatory disease)

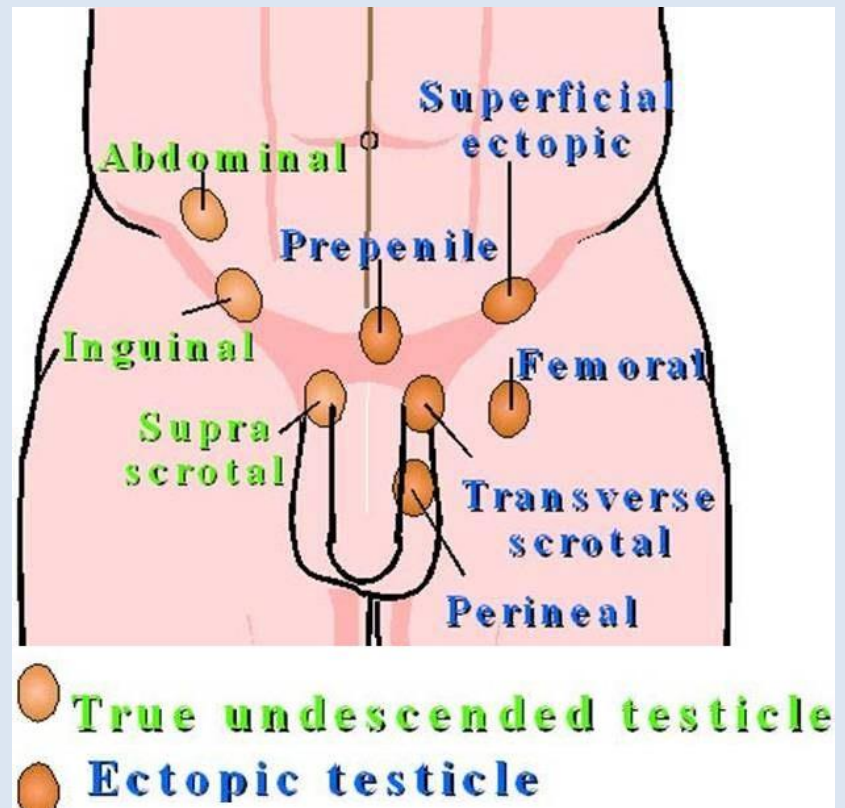




# Early refer if..

- **Male:**
- Undescended testes
- Previous genital pathology
- Previous uro-genital surgery

- **Both:**
- Prior treatment for cancer
- HIV
- Hep B. C



# Investigations for men

## Primary care

. Semen analysis

prolactine

Volume	>2.0ml
pH	>7.2
Sperm concentration	>20×10 <sup>6</sup> /ml
Total sperm count	>40×10 <sup>6</sup> /ejaculate
• Motility	>50% (grade a+b) or >25% (grade a)
• Morphology	>15% by strict criteria
Viability	>75%
WBC	<1×10 <sup>6</sup> /ml

WHO criteria of normal semen, 1999

- Hormone testing  
testosterone  
LH FSH

## Secondary care

- Testicular ultrasound
- T. Biopsy
- Genetic testing :  
karyotype

# Investigations for women

- Assess Ovulation: serum progesterone, LH/FSH levels
- Other Hormone testing:
  - Prolactin
  - Thyroid test
  - Androgen profile: SBHG DHEAS

- Ovarian reserve testing
- Genetic testing
- Pelvic ultrasound
- Laparoscopy
- Hystero-salpingography

The background of the slide is a vibrant yellow with a bokeh effect of light circles. Scattered across this background are numerous pink cosmos flowers of various sizes. Some flowers are in sharp focus, showing their delicate petals and dark brown centers, while others are blurred in the background, creating a sense of depth.

# **MEASUREMENTS OF REPRODUCTIVE POTENTIAL**

# Fertility Measures Women

## methods for Ovarian Reserve Testing (ORT)

**Trans-vaginal Ultrasound:** size and number of follicles (developing eggs) in the ovaries, named **AFC = Antral Follicle Count**.

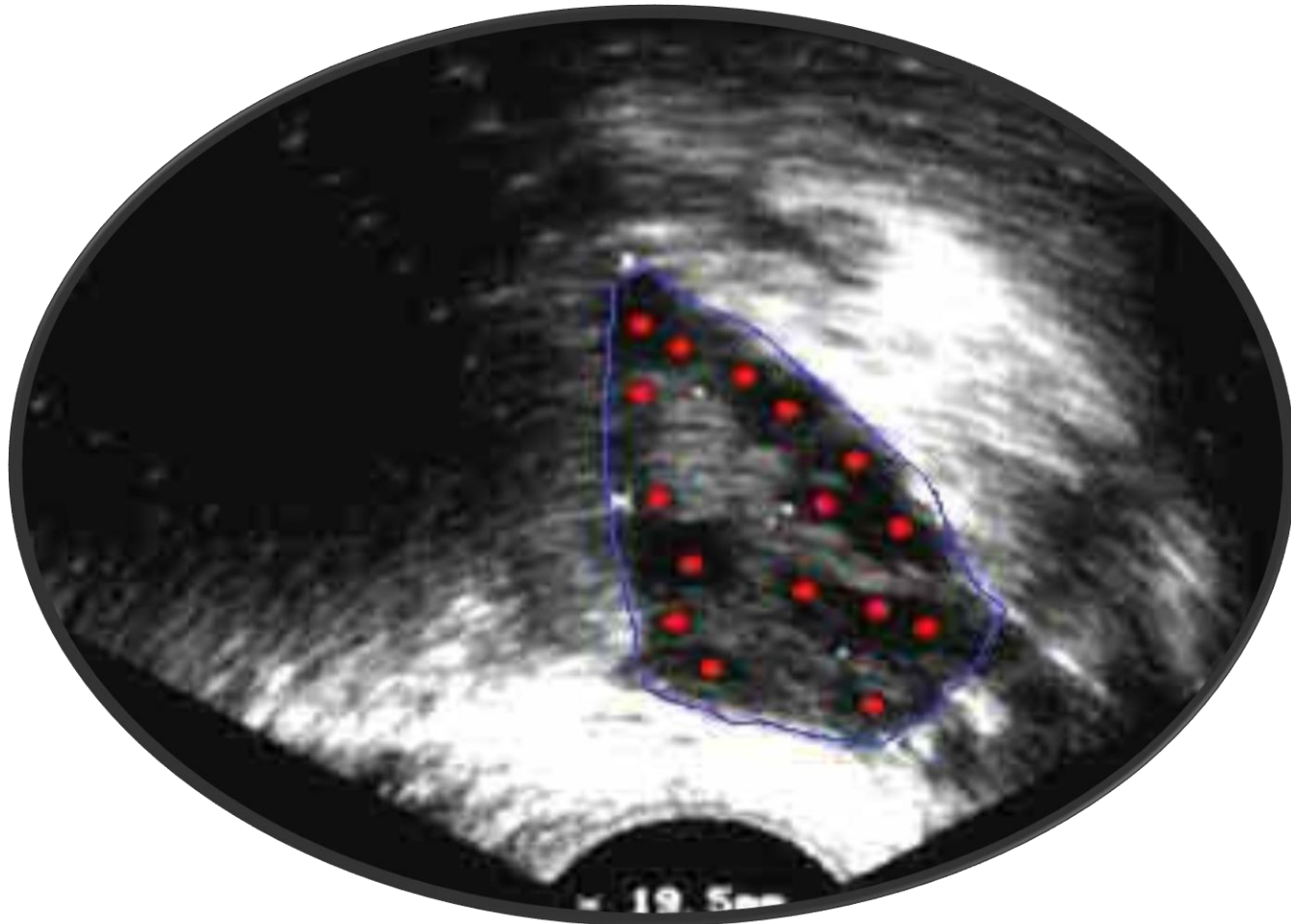
- .

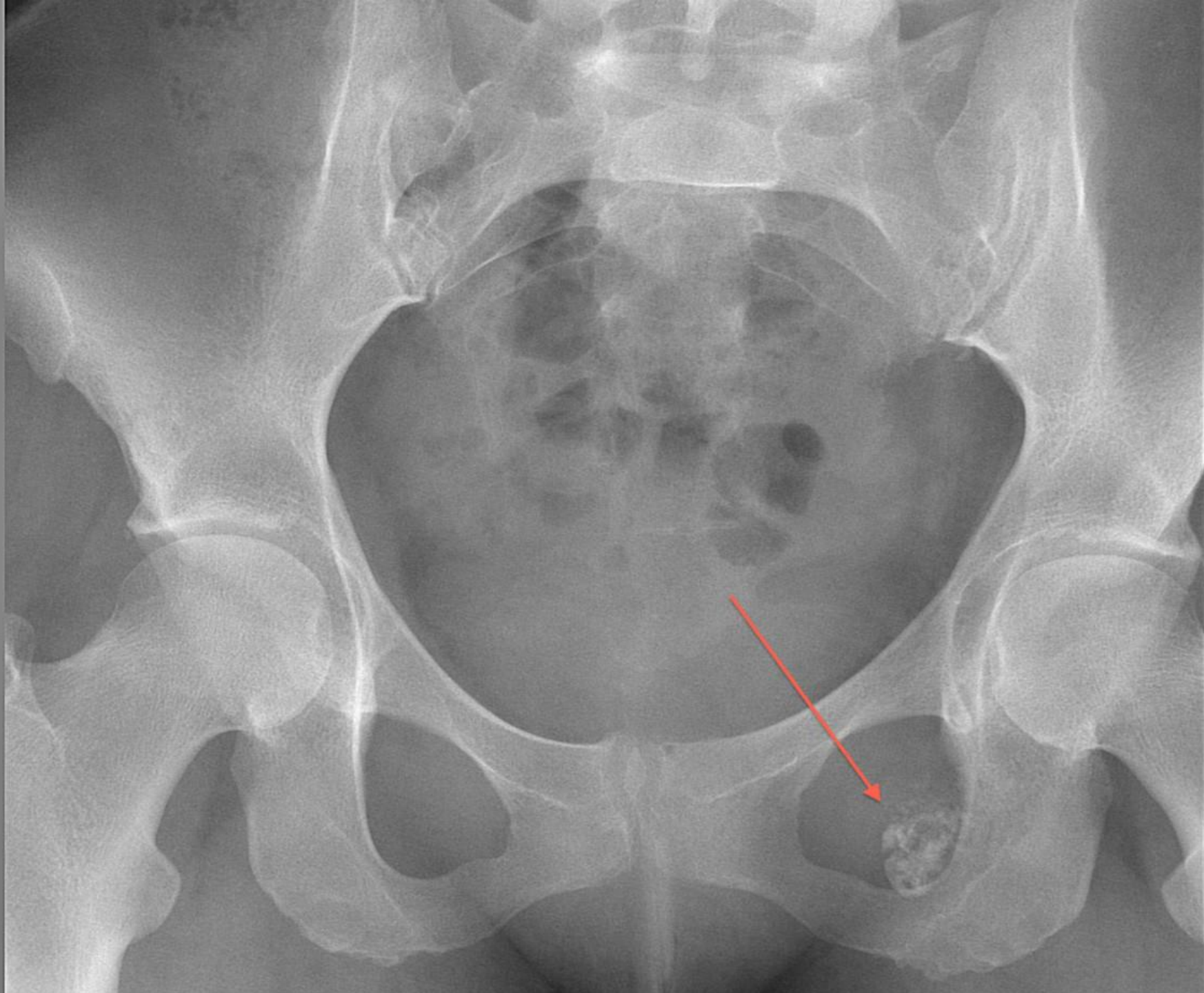
**AMH** a hormone secreted by the ovaries  
(blood test)

- A low level of AMH suggests that the ovary may be depleted of eggs
- Not LH/FSH dependent, therefore, a good prediction of ovarian follicle pool for thalassemia

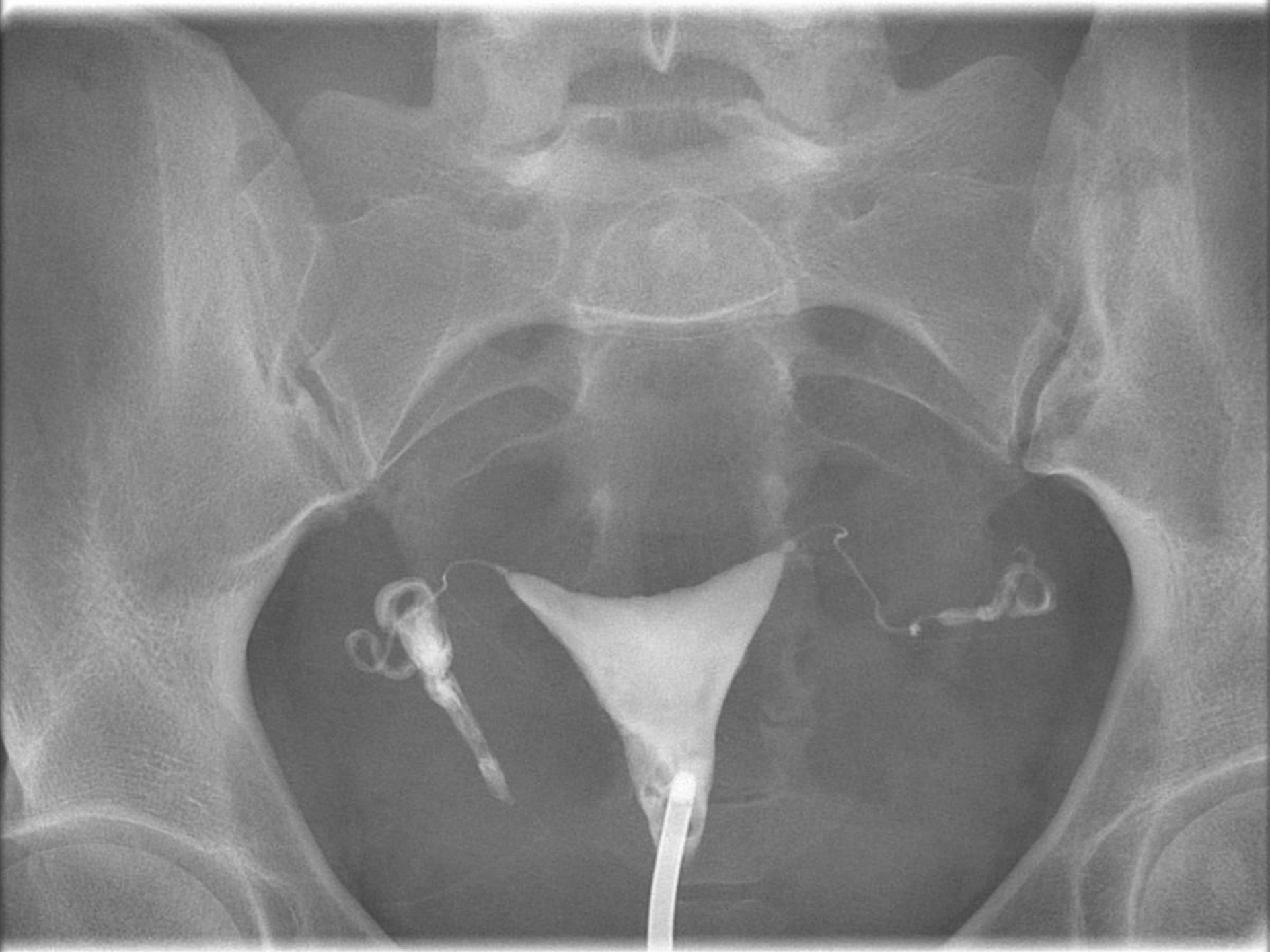


**Antral follicle count (AFC) reflects the pool of primordial follicles, those follicles that decline with age**

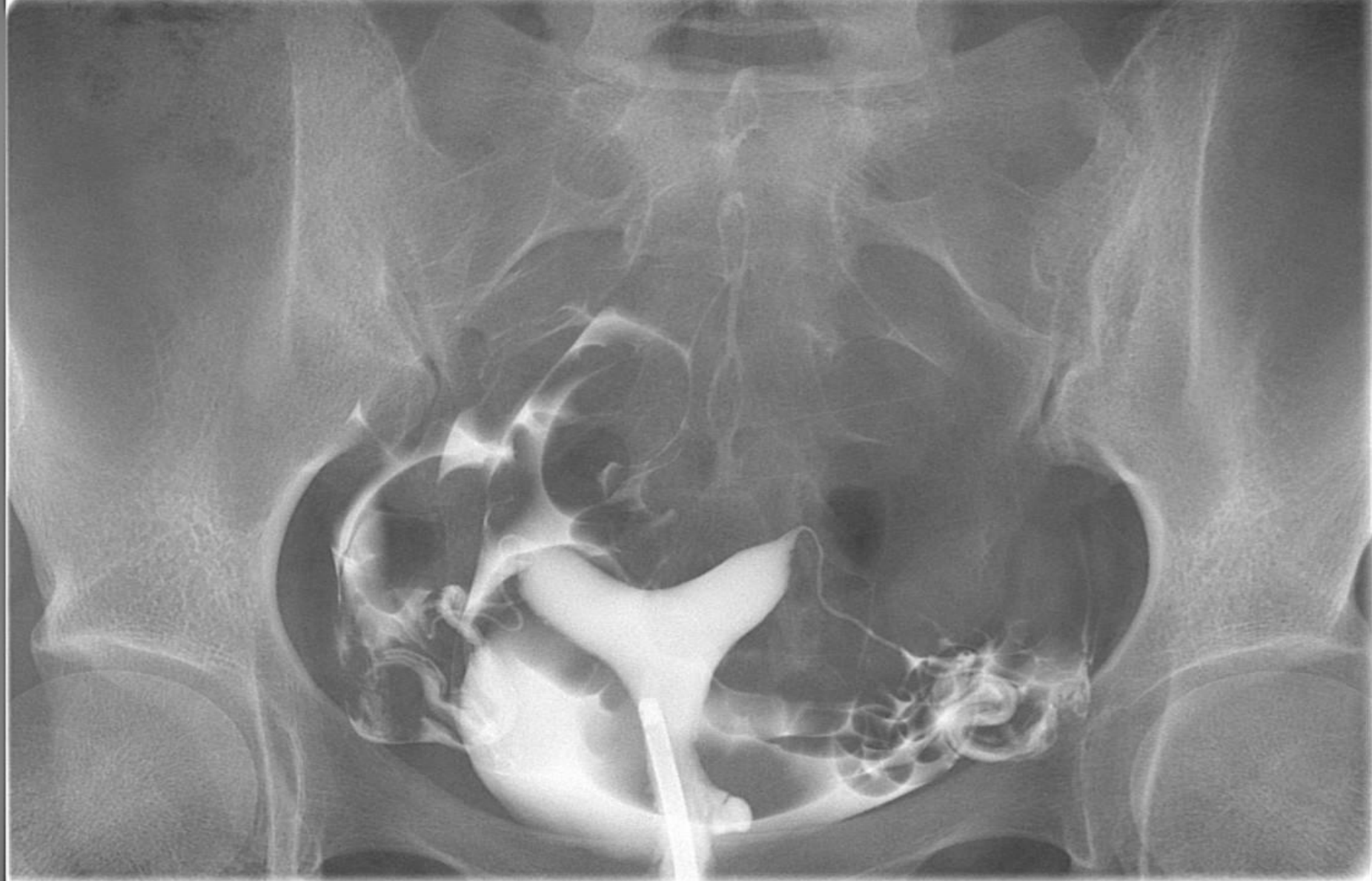














## NORMAL HSG

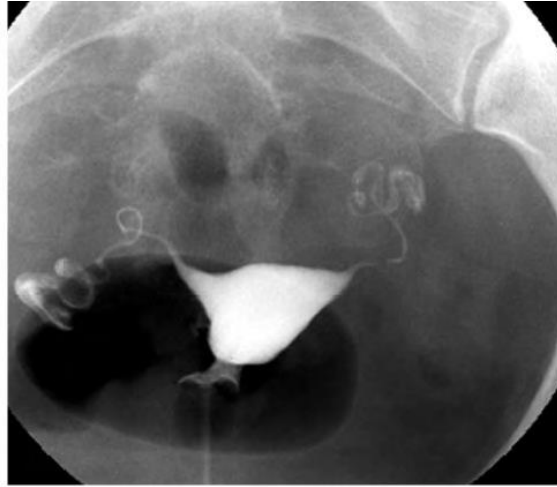
# At least 4 spot films taken

**1. Early filling phase**



a.

**2. Uterus fully distended**



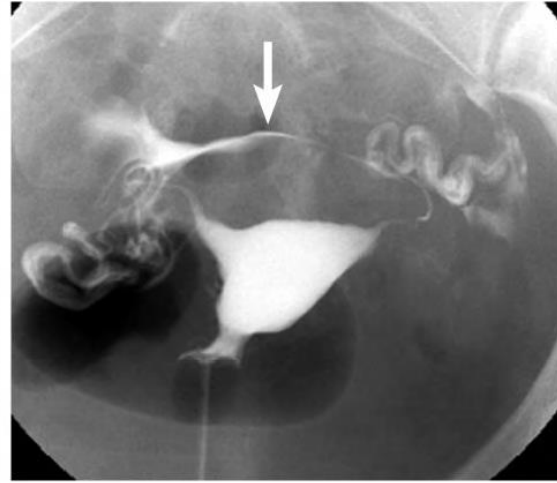
c.

**3. Tubal filling phase**



b.

**4. Peritoneal spillage**



d.

# Don't forget

- Rubella status
- Check immunity: vaccine if non immune



# Management in primary care

- *Lifestyle changes:*
- Avoid alcohol, tobacco and street drugs
- Exercise moderately
- Avoid weight extremes
- Limit caffeine
- Limit medications

# Management in primary care

- *Pre conceptual advice:*
- Folic acid supplementation
- Rubella status
- Cervical screening
- *Management of erectile dysfunction*
- Psychosexual counselling
- Drugs
- *Management of infection*

# CONCLUSION

- Infertility is multifactorial
- Anatomy, physiology, environment, hormones, and genetic all play a role





