Benign tumours of the Ovary
Development of the ovary:

- It is of triple origin:
  - Coelomic epithelium of the genital ridge.
  - the underlying mesoderm
  - Primitive germ cells
A
- celomic epithelium
- celom
- spinal cord
- notocord
- dorsal aorta
- gonadal ridge
- gut

B
- celomic epithelium
- Mul. duct
- Primordial follicles
- OSE

Embryo
stage: 25 somites  30 somites  14 weeks
Structure of ovaries:

- covered by a layer of simple cuboidal epithelium called germinal (ovarian) epithelium
- Underneath is a dense connective tissue capsule, the tunica albuginea
- an outer cortex contain follicles
- Medulla: loose connective tissue contain blood vessels and nerve fibers.
Physiological cyst:

- **Follicular cyst:** may persist for several menstrual cycles & may achieve a diameter of up to 10 cm. may produce estrogen causing menstrual disturbance & endometrial hyperplasia

- **Luteal cyst:** Corpora lutea are not called luteal cyst unless they are more than 3 cm.
Ovarian tumours are a group of neoplasms affecting the ovary and have a diverse spectrum of features according to the particular tumour entity. They include benign, low-malignant potential/borderline and malignant subtypes.
Histological Classification of benign ovarian tumours:

I- Benign germ cell tumours:
- Dermoid cyst (mature cystic teratoma)
- Mature solid teratoma

II- Benign epithelial tumours:
- Serous cystadenoma
- Mucinous cystadenoma
- Endometrioid cystadenoma
- Brenner tumours
- Clear cell (mesonephroid) tumours
III- Benign sex cord stromal tumours:
- Granulosa cell tumours
- Theca cell tumours
- Fibroma
- Sertoli-Leydig cell tumours
Benign germ cell tumours:

- The commonest ovarian tumours seen in women less than 30 years old.
- Arise from totipotential germ cells & may contain elements of all three germ layers (embryonic differentiation).
Dermoid cyst (mature cystic teratoma):

- usually unilocular
- < 15 cm in diameter
- ectodermal structures are predominant. lined with epithelium like the epidermis & contains skin appendages, teeth, sebaceous material, hair & nervous tissue.
- Endodermal derivatives include thyroid, bronchus & intestine,
- the mesoderm may be represented by bone, cartilage & smooth muscle
monodermal teratoma: The classic example is struma ovarii which contains hormonally active thyroid tissue.

majority of dermoid cysts are asymptomatic. may undergo torsion or rupture spontaneously, either suddenly, causing an acute abdomen & chemical peritonitis; or slowly causing chronic granulomatous peritonitis.

2% contain malignant component
Mature cystic teratoma
Benign epithelial tumour

- derived from the coelomic epithelium from which develop Müllerian & Wolffian structures. Therefore this may result in development along endocervical (mucinous cystadenoma), endometrial (endomeerioid) or tubal (serous) pathways or uroepithelial (Brenner) lines respectively.
Bladder

free fluid

R. ovarian cystic mass: (Cystadenoma)

hemorrhagic

L. ovarian cystic mass

small fibroids
Serous cystadenoma

- The most common benign epithelial tumour
- Usually unilocular cyst with papilliferous processes on the inner surface.
- Psammoma bodies are concentric calcified bodies which are more frequent in the malignant counterpart.
- The cyst fluid is thin & serous. They are seldom as large as mucinous tumours.
Mucinous cystadenoma

- Large
- Unilateral
- Multilocular cysts
- Smooth inner surface.
- Lining epithelium consists of columnar mucus-secreting cells.
- The cyst fluid is thick & gelatinous.
- Pseudomyxoma peritonei
Endometrioid tumours of the ovary
Clear cell tumour

- arise from serosal cells showing little differentiation. The typical histological appearance is of clear (hobnail) cells arranged in mixed pattern.
Brenner tumour

- Arise from Wolffian metaplasia of the surface epithelium.
- Consists of islands of transitional epithelium in a dense fibrotic stroma giving a solid appearance.
- The vast majority are benign. < 2 cm in diameter.
- Some secrete oestrogen.
Benign sex cord stromal tumours:

- Constitute a small percentage of benign ovarian tumours.
- They occur at any age from prepubertal children to elderly, postmenopausal women.
- Many secrete hormones & present with symptoms of inappropriate hormone effects.
Granulosa cell tumor

- These are malignant tumours but are mentioned here because they are generally confined to the ovary when they present & so have a good prognosis.
- Call-Exner bodies are pathognomonic but present in less than half of cases.
- Some secrete oestrogen or inhibin.
Theca cell tumour

- benign, solid & unilateral
- Oestrogen secreted, cause systemic effects such as precocious puberty, postmenopausal bleeding, endometrial hyperplasia & endometrial cancer
- rarely cause ascites or pleural effusion.
Fibroma:

- these are hard, mobile & lobulated with a glistening white surface.
- While ascites occur with many of the larger fibromas, Meig's syndrome – ascites & pleural effusion in association with fibroma of the ovary - is seen in only 1% of cases.
Sertoli-Leydig cell tumor

- usually of low-grade malignancy, they are rare.
- Many produce androgens, & signs of virilization are seen in three quarters of patients. Some secrete oestrogen
Presentation:

- Asymptomatic
- Pain
- Abdominal swelling: noticed only when the tumour is very large.
- Pressure effects
- Menstrual disturbance
- Hormonal effects
- Abnormal cervical smear
Differential diagnosis of benign ovarian tumours:

- Pain
  - Ectopic pregnancy
  - Spontaneous abortion
  - Pelvic inflammatory disease
  - Appendicitis
  - Meckel's diverticulum
  - Diverticulitis
Abdominal swelling

- Pregnant uterus
- Fibroid
- Full bladder
- Ovarian malignancy
- Colorectal carcinoma

Pressure effects

- Urinary tract infection

All other causes of menstrual irregularities, precocious puberty & postmenopausal bleeding.
Diagnosis:

- History:

- Examination:
  - Peritonism is an ominous sign.
  - Bimanual examination is essential for palpating the mass between the vaginal & abdominal hands, its mobility, texture & consistency, presence of palpable lymph nodes in the pouch of Douglas. Hard, irregular, fixed mass is likely to be invasive.
Investigations:

- **Ultrasound**: mass size, consistency, and internal architecture. Bilatrality, ascites
- Doppler ultrasonography to evaluate the resistive index of the mass vessels, which, when low, indicate a malignancy.
- **Radiological investigations**
Blood test & serum markers:

1. serum CA 125
2. beta-human chorionic gonadotrophin (β-hCG)
3. Oestradiol
4. Androgen
5. alpha-fetoprotein levels
The following masses pose the greatest concern:

- Those that have a complex internal structure
- Those that have solid components
- Associated with pain
- Masses in prepubescent or postmenopausal women
- Large cysts (cysts up to 10 cm have been followed conservatively)
Management:

Criteria for observation of asymptomatic ovarian tumour:

- Unilateral
- Unilocular cyst without solid components
- Premenopausal women tumour 3-10 cm in diameter
- Postmenopausal women tumour 2-6 cm in diameter
- Normal CA 125 (\(<35\) mU/mL)
- No free fluid or masses suggesting omental cake or matted bowel loops.
Observation include follow up with US after 3 months, if the cyst is the same follow up with US & CA 125 level will be safe.
Patient with symptoms:

- The pregnant patient:

- If the patient presents with acute pain due to torsion or hemorrhage into an ovarian tumor, undertake a laparotomy regardless of the stage of pregnancy.

- If an asymptomatic cyst is discovered, wait until after 14 weeks gestation before removing it. This avoids the risk of removing a corpus luteal cyst upon which the pregnancy might still be dependant.
In the second & third trimesters. Cysts less than 10 cm in diameter that have a simple appearance on ultrasound may be followed ultrasonograpically. If the cyst is unresolved 6 weeks postpartum, surgery undertaken.

A cyst with features suggestive of malignancy on ultrasound or one that is growing should be removed surgically. Management may include a Caesarian hysterectomy, bilateral salpingo-oophorectomy & omentectomy.
Treatment:
Laparoscopic procedures:

- Indications of laparoscopy:
- Uncertainty about the nature of the mass.
- Tumour suitable for laparoscopic surgery:
  - age <35 years.
  - ultrasound show no solid component.
  - simple ovarian cyst.
  - endometrioma.
- **Laparotomy:**
- If there is any possibility of invasive disease, a longitudinal skin incision.
- A sample of ascitic fluid or peritoneal washings should be sent for cytological examination at the beginning of the operation.
- Explore the whole abdomen thoroughly & inspect both ovaries.
Age < 35 years old ovarian cystectomy

Age > 44 years with a unilateral ovarian mass, total abdominal hysterectomy, bilateral salpingo-oophorectomy & infracolic omentectomy.

Age 35-44 years treatment should be individualized. If conservative surgery is planned, preliminary hysteroscopy & curettage of the uterus are essential to exclude a concomitant endometrial tumour.