



# FEMALE GENITAL SYSTEM PATHOLOGY

## Lec. 6

- A.P.Dr. Maather Bager Hussein
- Department of Pathology

## Case scenario

A 63 year old lady presents with abdominal mass and weight loss, was diagnosed as having an ovarian tumor.

## Objectives of this lecture

At the end of the lecture

- **Anatomy and normal histology of ovary (rapid revision)**
- **Classification of ovarian Neoplastic disorders**
- ❖ **Types**
- ❖ **Presentation**
- ❖ **Histopathological finding**

# OVARIAN NEOPLASM

- Fifth leading cause of cancer death in women.
- Average lifetime risk is 1 in 70
- 75% present with stage III or IV disease.
- Early diagnosis is frequently difficult because of vague abdominal symptoms at presentation (Ovarian cancers grow silently and go undetected in the early stage when it is still curable. Most of the patients already have metastasis at the time of diagnosis)
- Because most are detected only after spreading beyond the ovary, they account for a disproportionate number of cancer deaths.

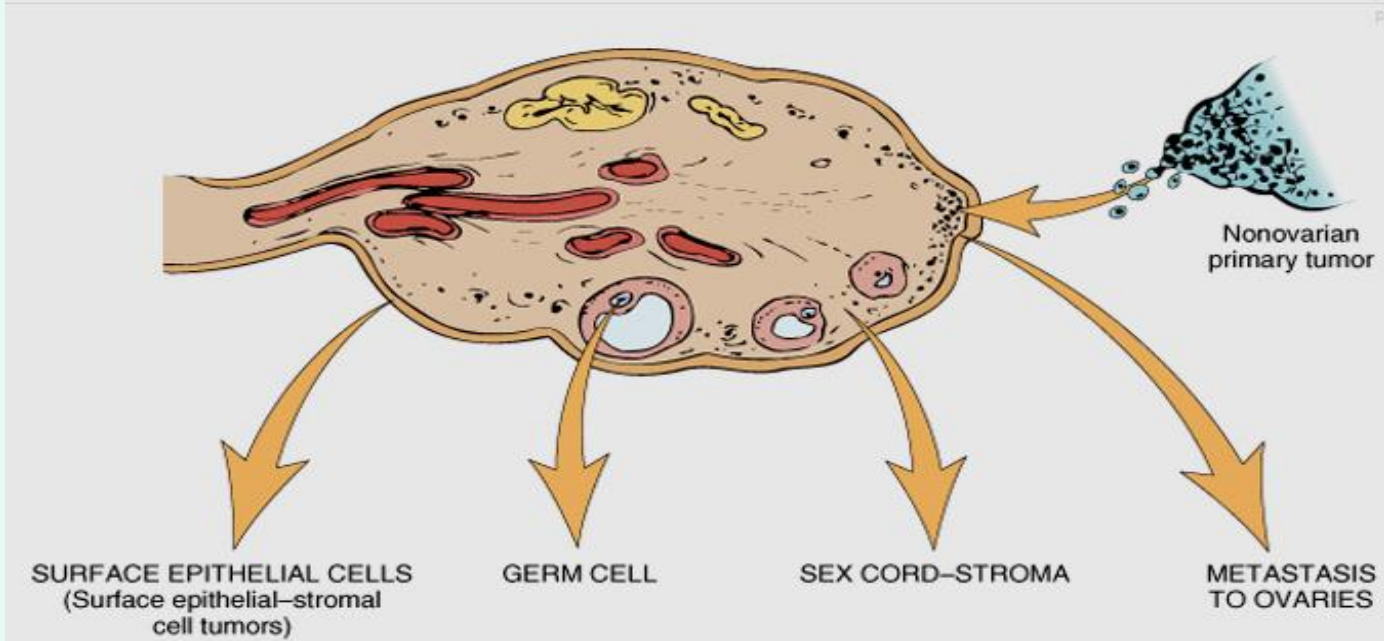
## **Classified:-**

**Primary ovarian tumor**

**Secondary ovarian tumor**

# Classification

WHO classification separates ovarian neoplasms according to most probable tissue of origin



Overall frequency	65%–70%	15%–20%	5%–10%	5%
Proportion of malignant ovarian tumors	90%	3%–5%	2%–3%	5%
Age group affected	20+ years	0–25+ years	All ages	Variable
Types	<ul style="list-style-type: none"> <li>• Serous tumor</li> <li>• Mucinous tumor</li> <li>• Endometrioid tumor</li> <li>• Clear cell tumor</li> <li>• Brenner tumor</li> <li>• Cystadenofibroma</li> </ul>	<ul style="list-style-type: none"> <li>• Teratoma</li> <li>• Dysgerminoma</li> <li>• Endodermal sinus tumor</li> <li>• Choriocarcinoma</li> </ul>	<ul style="list-style-type: none"> <li>• Fibroma</li> <li>• Granulosa-theca cell tumor</li> <li>• Sertoli-Leydig cell tumor</li> </ul>	

# Risk Factors for Ovarian Cancer

## Patient factors

- Increasing age
- Personal history of breast cancer

## Genetic factors

- Family history of ovarian cancer
- BRCA 1 / 2 mutations
- Hereditary nonpolyposis colorectal cancer

## Reproductive factors

- Nulliparity
- Early menarche
- Late menopause
- Infertility
- Polycystic ovarian syndrome
- Endometriosis
- ovulation inducing drugs
- Hormone replacement therapy

## Environmental factors

- Obesity and high fat diet
- Talc exposure
- Cigarette smoking (for mucinous ovarian cancer)

**A higher risk for developing epithelial ovarian cancer is for nulliparous women**

- **Strongest risk factor is a family history of ovarian cancer**
- **5–10% of tumors result from a known genetic disposition.**

**A lower risk for those**

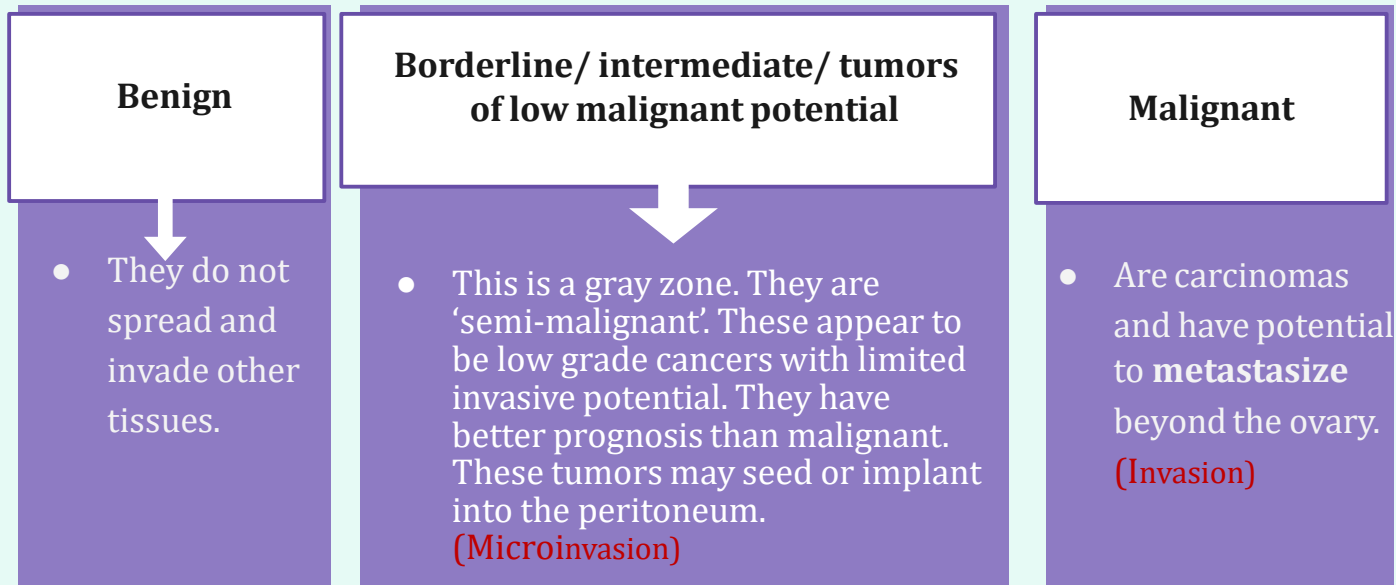
- **who have had children**
- **who have breastfed**
- **who have taken oral contraceptives.**

**Lifetime risk:**

- general population 1.8% or 1 in 70
- One first-degree relative: 5%,
- Two first-degree relatives: 25–50%.

# 1- Surface Epithelial ovarian tumor

- Represent 65-70 % of all primary ovarian neoplasm.
- **Incidence:** <20 y=20%, 20-50 y=70%. >50 y =80%):
- 5 basic histological groups according to cell type & tissue differentiation :
  - 1- SEROUS-----Fallopian tube
  - 2- Mucinous. -----Cervix and intestinal epithelium
  - 3- Endometrioid. -----Endometrium
  - 4- Brenner's. Transitional epithelium in the urogenital tract
  - 5- **Clear cell adenocarcinoma.**
- And according to **cell atypia** in to



- **Clinical Course of SEOT:-**

- ❖ These tumors tend to have similar manifestations:

*lower abdominal pain and enlargement, with symptoms secondary to bowel or bladder compression.*

- ❖ **Benign** lesions are readily resected;

**Malignant** lesions are associated with *progressive cachexia, and dissemination beyond the capsule can cause massive ascites and/or diffuse peritoneal effusion.*

- ❖ Most patients are diagnosed only after the tumor has become large or disseminated, leading to poor overall survival statistics.

**CA-125** (a high-molecular-weight glycoprotein marker of ovarian cancer) is present in the serum of more than 80% of patients with serous or endometrioid carcinomas. However, it is more useful as a tool in monitoring disease progression than in primary diagnosis since non-specific peritoneal inflammation also increases the serum levels.

Elevated **Osteopontin** levels may allow earlier ovarian cancer detection.

## 1- Serous tumors

- the most common type of ovarian tumors. They are also the most common group of epithelial tumors. 40% of the total ovarian malignancy .
- The tumor cells are of serous nature and the mass is usually cystic filled with clear serous fluid.
- Age is 30 - 40.
- The tumors are subdivided into benign (60%), borderline (15%) and malignant (25%).
- ***Bilaterality* : commonly bilateral.**
- Because there are no early signs or symptoms with masses in the ovary, many of these ovarian tumors have metastasized by the time they are detected with abdominal enlargement with ascites due to abdominal metastases. These neoplasms characteristically spread by "seeding" along peritoneal surfaces
- Prognosis; poor.



## Malignant serous tumors (serous cystadenocarcinoma)

- cells are markedly atypical, the papillary formations are usually complex and multilayered, and by definition nests or Sheets of malignant cells **invade the ovarian stroma**.

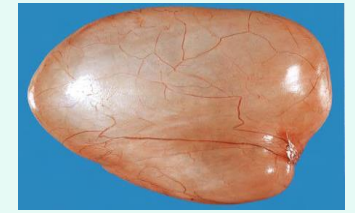
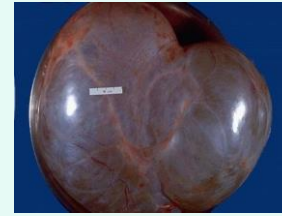
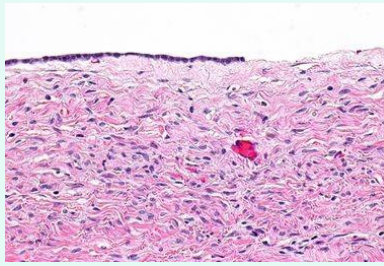
### Borderline serous tumors

- Cystic with thin wall and smooth surface, but often have **multiple papillary excrescences** (grape-like clusters), protruding into the lumen in places.
- Cytologic atypia with **no stromal invasion**

### Benign serous tumors (serous cystadenomas)

- Are commonly large, cystic and thin-walled, and **unilocular**.
- They are lined by serous cells and contain thin, clear yellow fluid.
- Single layer of columnar epithelial line the cyst

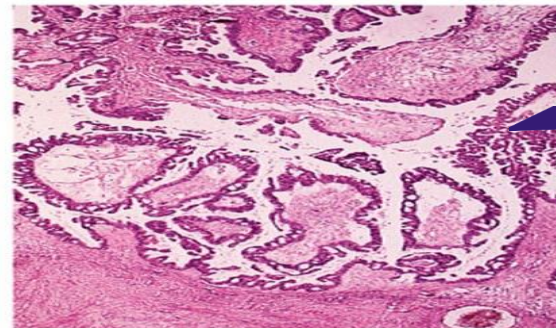
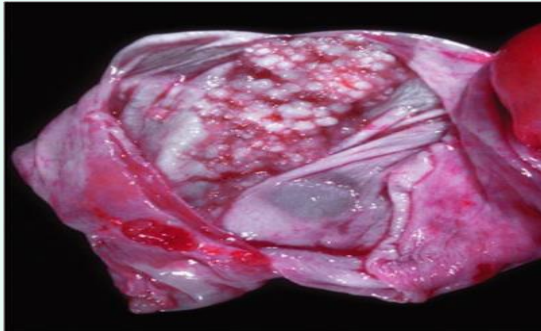
## Serous cystadenoma



- Serous
- No invasion
- Cytoplasm is not clear

- Thin wall
- 2 cysts

## Borderline **Serous** tumor

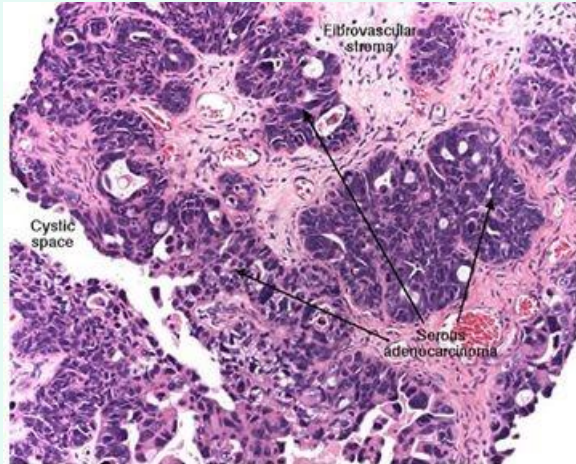


Finger like projection

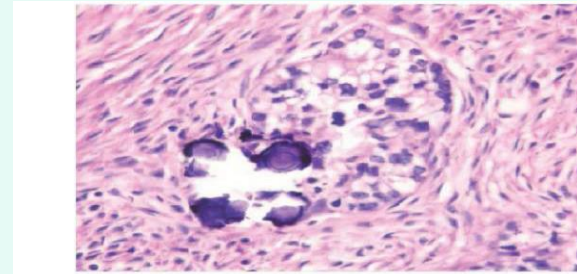
- Papillary projection

- No invasion of stroma = borderline

# Serous cystadenocarcinoma, ovary



- Columnar mitosis and necrosis infiltration of stroma  
psammoma bodies



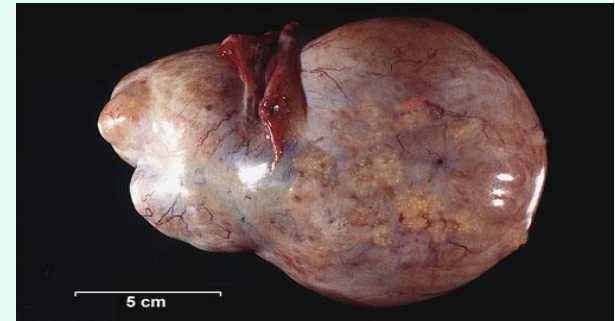
small concretions called psammoma bodies.



This ovarian papillary cystadenocarcinoma is mostly composed of solid tissue and has invaded outside of the ovary, with papillations seen over the surface..



- Cystic but mostly solid



- Mostly solid mass with irregularity and fixation and nodularity of the capsule are indicators of malignancy



## 2- Mucinous Adenocarcinoma

- Mucinous tumors account for roughly 30% of all ovarian neoplasms;
- The tumor cells are mucin-producing cells (which are either endocervical type or intestinal type cells).
- Less likely to be malignant than serous tumors.
- 80% are benign, 10% are borderline & 10% malignant.
- **large tumors** *They tend to produce large cystic masses (25kgs)* Multiloculated tumor filled with sticky, gelatinous fluid rich in glycoproteins
- **bilaterality is uncommon** “unilateral most common”,
- These tumors can seed the peritoneum with numerous implants that produce extensive mucinous ascites, called **pseudomyxoma peritonei**.
- **Five-year survival rates for stage I disease are more than 90%.**

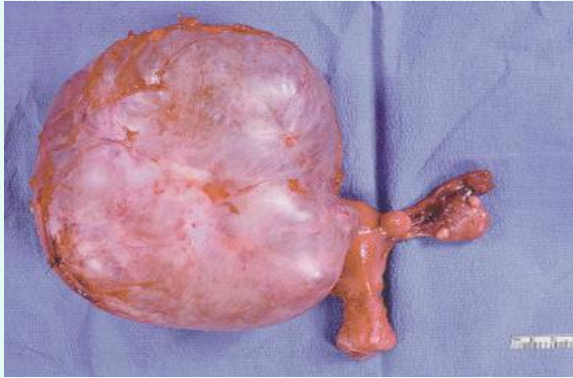


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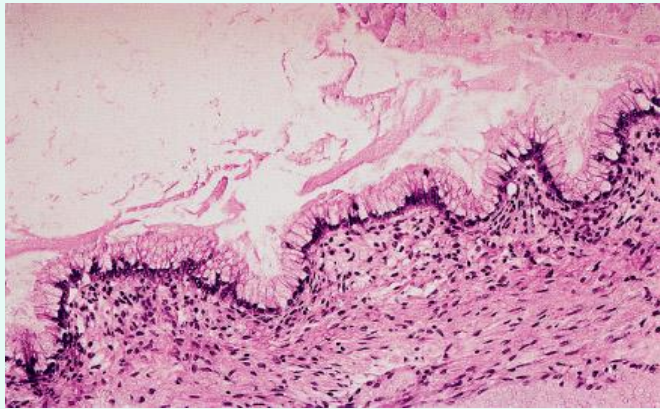
mucinous tumors are much less likely to be bilateral. This feature is sometimes useful in differentiating mucinous tumors of the ovary from metastatic mucinous adenocarcinoma from a gastrointestinal tract primary (the so-called “Krukenberg tumor”), which more often produces bilateral ovarian masses.

# Morphology

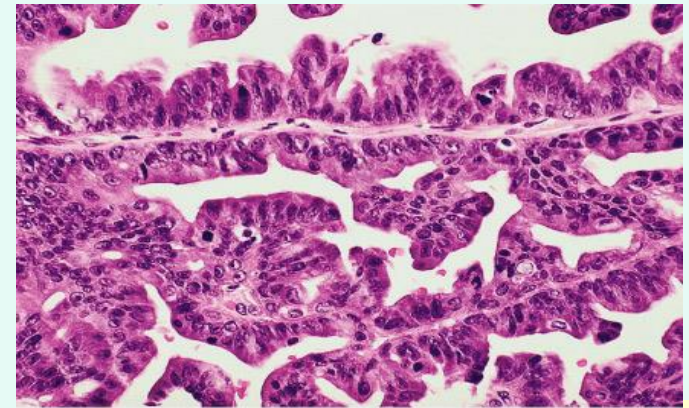
## Mucinous cystadenoma (Cysts of variable sizes)



**displaying multicystic appearance and delicate septa.  
Note the presence of glistening mucin within the cysts.**



**Lining of mucinous cystadenoma. Goblet cells are evident. This subtype, which is by far the most common, is referred to as intestinal.**

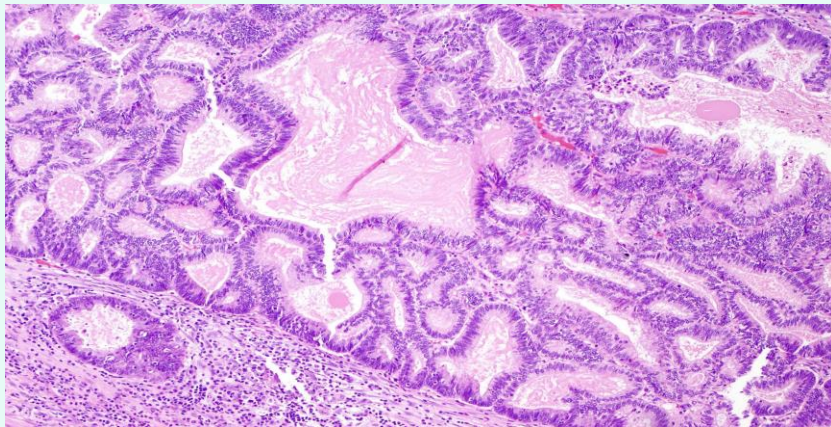


**Mucinous cystadenocarcinoma**  
Malignant tumors exhibit papillae, nuclear atypia and stratification, necrosis et.c

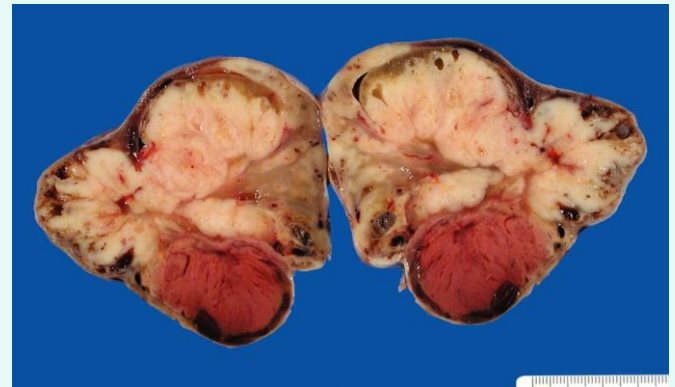


### 3- Endometrioid tumors

- They have a tubular gland that resembles the endometrium so the name
- endometrioid (endometrium-like).
- 20% of all ovarian cancers
- occurs primarily in women who are between 50 and 70 years of age.
- Most are carcinomas.
- 40% are bilateral
- 15% are accompanied by endometrial ca
- 15% to 20% co-exists with ovarian endometriosis
- 5yr survival for stage I is ~75%



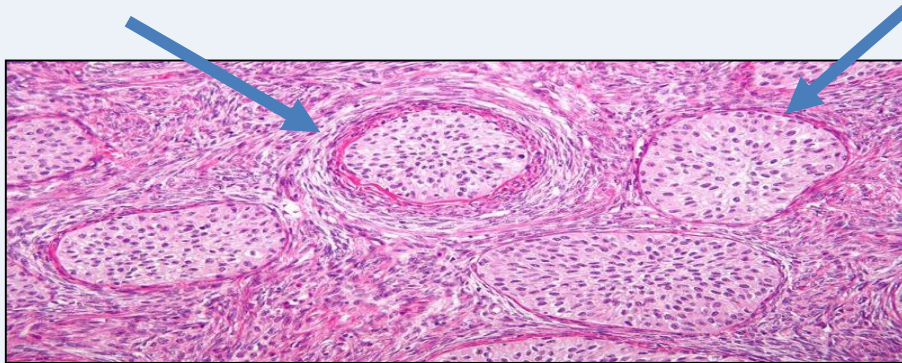
Microscopically: The glandular patterns bear a strong resemblance to endometrial adenocarcinoma



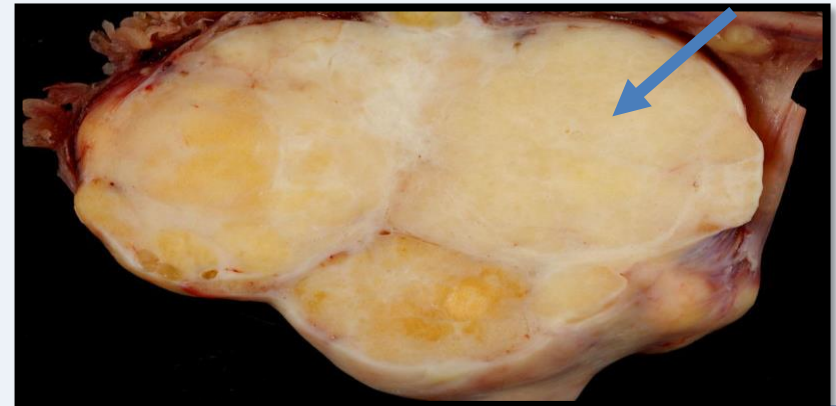
**Gross: cystic and solid areas**

## 4- Brenner Tumor

- **Sheets of epithelium like the lining of the bladder with Transitional epithelium with fibrous component**
- **Account for 3% of all ovarian tumors**
- **Benign : most common**
- **Borderline & malignant : very rare (malignant < 1% of epithelial tumors)**
- **Occur in reproductive life**
- **May be associated with endometrial hyperplasia**
- **May coexist with mucinous cystadenoma from mucinous transformation that may occur**
- **They are usually Unilateral ( bilateral in < 5%)**



Sheets or nest of benign cells folded like coffee-bean

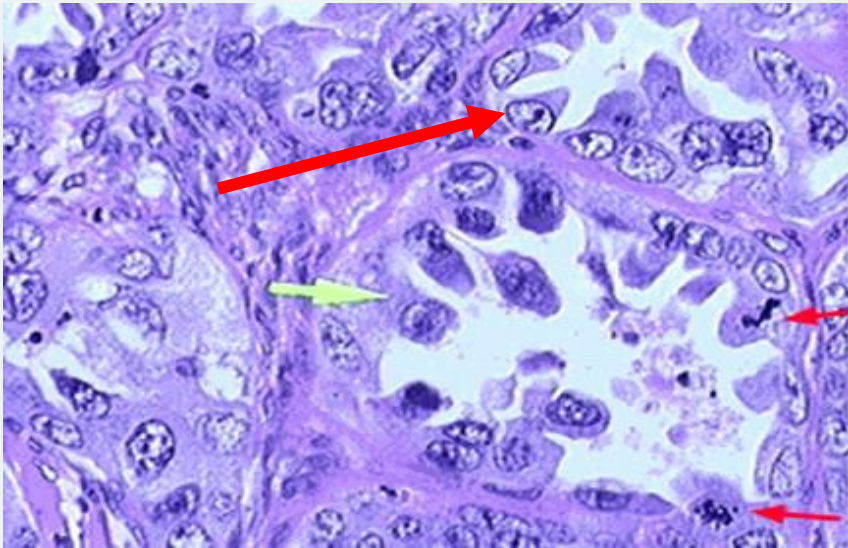


Is a variably sized (1 to 30 cm)  
Solid , firm  
Grayish  
Smooth external surface  
Whorly cut section



- **5- Clear cell adenocarcinoma**

- is uncommon 1-3% of all ovarian tumors
- In almost is malignant
- It is considered a variant of endometrioid adenocarcinoma;
- Patients with cancer confined to the ovary have 5-year survivals of 65%; with extra-ovarian spread, 5-year survival is unusual.
- *On microscopic examination, composed of cells with bulbous nucleus & nuclear projection to clear cytoplasm (that contains glycogen) (Hob nail cells).*
- *The pattern may be glandular, papillary or solid.*



**(Hob nail cells).**



**Tumors can be cystic or solid**

THANK YOU  
FOR YOUR  
ATTENTION