Obstetrics & Gynecology
TEAM

Ovarian Tumors

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◆very important ◆mentioned by doctor ◆team notes ◆not important

❖ Ovarian Tumors

- It is estimated that 5-10% of women will undergo a surgical procedure for a suspected ovarian neoplasm during their lifetime
- The majority of these neoplasms are benign
- Age is the most important factor for determining the potential for malignant change; the older the woman, the higher chance for malignancy.

❖ Ddx Of Adnexal Mass (Adnexa = Ovary + fallopian tube)

Table 10–1. DIFFERENTIAL DIAGNOSIS OF ADNEXAL MASS

ORGAN	CYSTIC	SOLID
Ovary	Functional cyst Neoplastic cyst Benign Malignant Endometriosis	Neoplasm Benign Malignant
Fallopian tube	Tubo-ovarian abscess Hydrosalpinx Parovarian cyst	Tubo-ovarian abscess Ectopic pregnancy Neoplasm
Uterus	Intrauterine pregnancy in a bicornuate uterus	Pedunculated or interligamentous myoma
Bowel	Sigmoid or cecum distended with gas or feces	Diverticulitis Ileitis Appendicitis Colonic cancer
Miscellaneous	Distended bladder Pelvic kidney Urachal cyst	Abdominal wall hematoma or abscess Retroperitoneal neoplasm

❖ Functional/Physiological Cysts

- They are related to the process of ovulation.
- Normal cycle: follicular growth > ovulation > corpus luteum. (Anything can happen during this process)
- These cysts are benign and represent an exaggerated physiologic response of the ovary
- Corpus luteum, Follicular and Theca-lutein cysts
- They are the most common clinically detectable enlargement of the ovary occurring during the reproductive years
- They can reach a size as large as 10 cm in diameter
- The cysts usually resolve within a few days to 2 weeks since they are physiological. However, they can persist longer.
- We don't operate on them! In fact, operating on them might be considered as malpractice since there is a risk of taking out healthy tissue which might lead to adhesions >> jeopardizing fertility. 2
- Risk factor: pts with fertility problems on ovulation induction.

❖ Ovarian Neoplasms

- Unrelated to menstrual cycle.
- 20% of all ovarian neoplasms are malignant. Most are benign!
- Most of these neoplasms are asymptomatic unless they have subject to rupture (very rare) or torsion (pt present with severe ischemic pain + N/V).
- Because it is mostly asymptomatic and there is no screening test, pts mostly present AT A LATE STAGE!
- Abdominal distension/pressure is the presenting symptom,; they grow slowly and it might take months.
- They can be cystic or solid tumors.

➢ **Physical examination:** Solid or cystic? Fixed or mobile? Any ascites (indicative of Ca)?

- Solid fixed irregular masses are suspicious for CA
- Predictive value of the examination alone improves as the patient ages since risk of malignancy is high.

➢ **CA 125 and non-malignant gynecologic diseases:**

Disease	% CA 125 > 35
H mole	60%
Early PG	60%
Fibroids	40%
PID/TOA	35%
Dermoids	20%
Endometriosis	10-80%
Normal Controls	4%

- We use CA 125 mainly to monitor response of treatment and follow up for any recurrences.
- It is much useful for older pts since these conditions are less common among them.

➢ **CA 125 and menopausal status:**

- Premenopausal women: approx. 15% with elevated CA 125 and pelvic mass have malignancy
- Postmenopausal women: approx. 80% with elevated CA 125 and pelvic mass have malignancy

➢ **Ultrasound criteria:**

- Tumor volume
- Wall structure
- Septal structure.

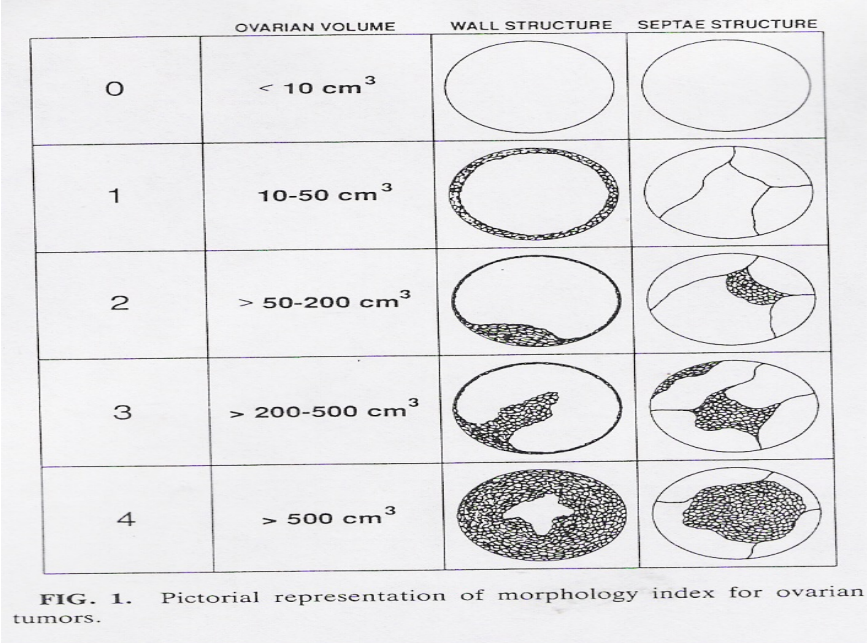
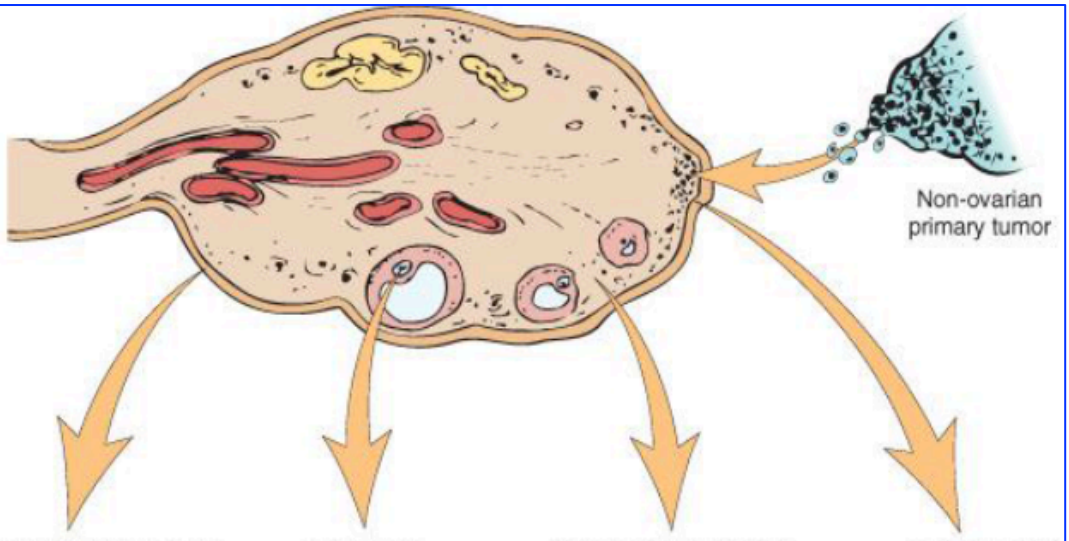
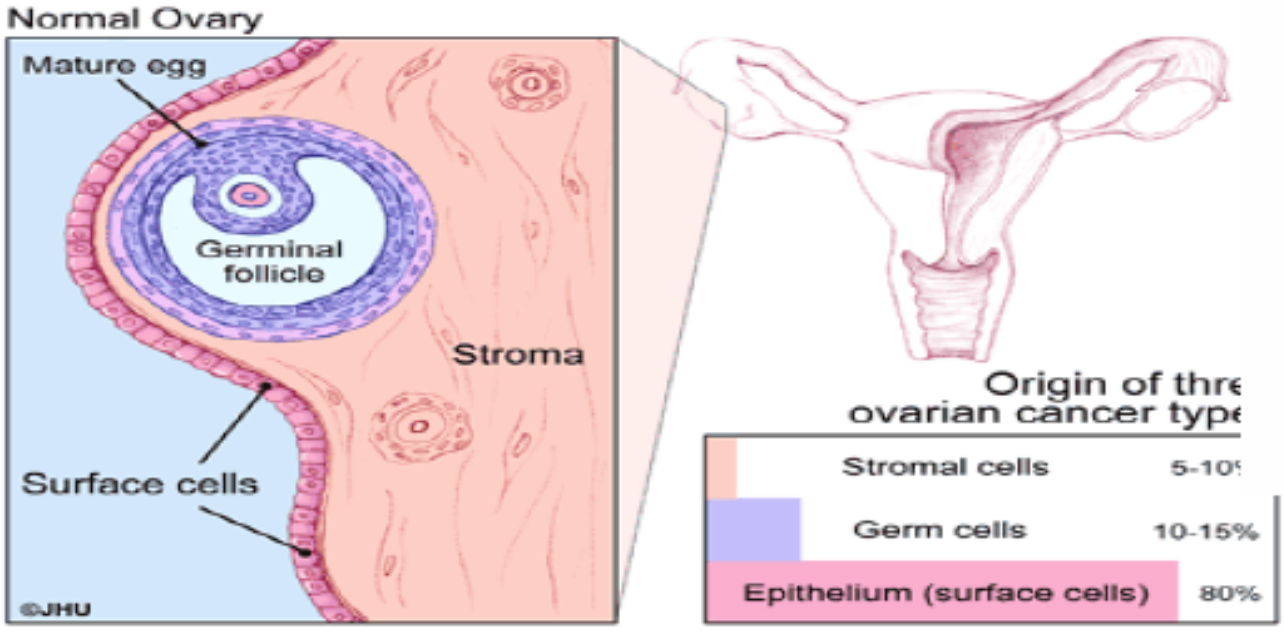


FIG. 1. Pictorial representation of morphology index for ovarian tumors.

❖ Origin Of Ovarian Neoplasms



ORIGIN	SURFACE EPITHELIAL CELLS (Surface epithelial–stromal cell tumors)	GERM CELL	SEX CORD–STROMA	METASTASIS TO OVARIES
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	• Serous tumor • Mucinous tumor • Endometrioid tumor • Clear cell tumor • Brenner tumor • Cystadenofibroma	• Teratoma • Dysgerminoma • Endodermal sinus tumor • Choriocarcinoma	• Fibroma • Granulosa–theca cell tumor • Sertoli–Leydig cell tumor	



❖ Ovarian Neoplasms

➢ **Benign neoplasms:**

- The most common benign cystic neoplasms of the ovary are serous and mucinous cystadenomas and cystic teratomas (dermoids)
- Benign solid tumors of the ovary are usually connective tissue origin (Fibromas, Thecomas)
- Meigs' syndrome is an uncommon clinical entity in which a benign ovarian fibroma is seen with ascites and hydrothorax, these disappear after resection.

➢ **Ovarian Ca:**

- The lifetime risk for developing ovarian cancer is 1.6% in the general population
- Ovarian cancer accounts for 3.3% of all new cases of cancer.
- The fifth in cancer deaths among women.
- Accounts for more deaths than any other cancer of the female reproduction system due to the late presentation.
- Only 19% of ovarian cancers discovered at early stage.
- Most cases are diagnosed in the seventh decade of life.
- Mostly sporadic

➢ **Risk factors for ovarian Ca:**

- Nulliparous women: Women who have been pregnant have 50% decrease risk for developing ovarian cancer compared to nulliparous women AND Multiple pregnancies offer an increasingly protective effect
- HRT.
- Obesity: Studies have suggested that women who are obese at age of 18 are at increased risk of developing ovarian cancer before menopause.
- Hereditary: BRCA1+2 gene mutation.
- OCP: The use of OCP more than one year reduce the risk of ovarian cancer by 30%-50%

❖ Surface Epithelial Tumors

➢ **Histology:**

1. Serous (tubal)
2. Mucinous (endocx & intestinal)
3. Endometrioid
4. Transitional cell - Brenners.
5. Clear cell

➢ **It could be:**

Type	Gross	Microscope
Benign (Cystadenoma)	Cystic	Fine papillae, single layer covering (no stratification, no nuclearatypia, no stromal invasion).
Borderline	Cystic / solid foci	Papillary complexity, stratification, nuclear atypia, no stromal invasion
Malignant (Cystadenocarcinoma)	Solid & hemorrhage / necrosis	Papillary complexity, stratification, nucle atypia stromal invasion

1. Serous Cysadenomas

- Serous cystadenomas more common than the mucinous type.
- 10% are bilateral.
- Usually they are smaller in size while mucinous very large
- Usually they are unilocular.
- There is always a chance of recurrence after surgery.

2. Mucinous Cysadenomas

- Less common 25%, very large
- Rarely malignant – 15%
- Multilocular (many small cysts)
- Usually large tumor
- Rarely bilateral – 5-20%
- Tall columnar, apical mucin

➢ **Pseudomyxoma peritonei IMP!**

- Ovarian mass associated with large amount of mucin ascites (gelatinous ascites)
- It is almost always appendicular in origin (we always check the appendix and we remove it surgically!)
- The treatment is surgical, but recurrence is usual
- Hard to treat, b/c the mucinous cells are implanted all over the peritoneal surfaces. They die from malnutrition

3. Brenners Epithelial Tumor

- Usually benign can be malignant.
- May coexist mucinous cystadenoma.
- Can be associated with endometrial cancer.

❖ Borderline Malignant Epithelial Ovarian Neoplasms

- Account for 15% of all epithelial ovarian cancers
- They occupy an intermediate position between the benign cystadenomas and the frankly malignant cystadenocarcinomas.
- The 10 year survival rate for stage I is over 95%
- Late recurrence may occur as many as 20 years after initial diagnosis
- The treatment is essentially surgical

➢ **Genetic causes:**

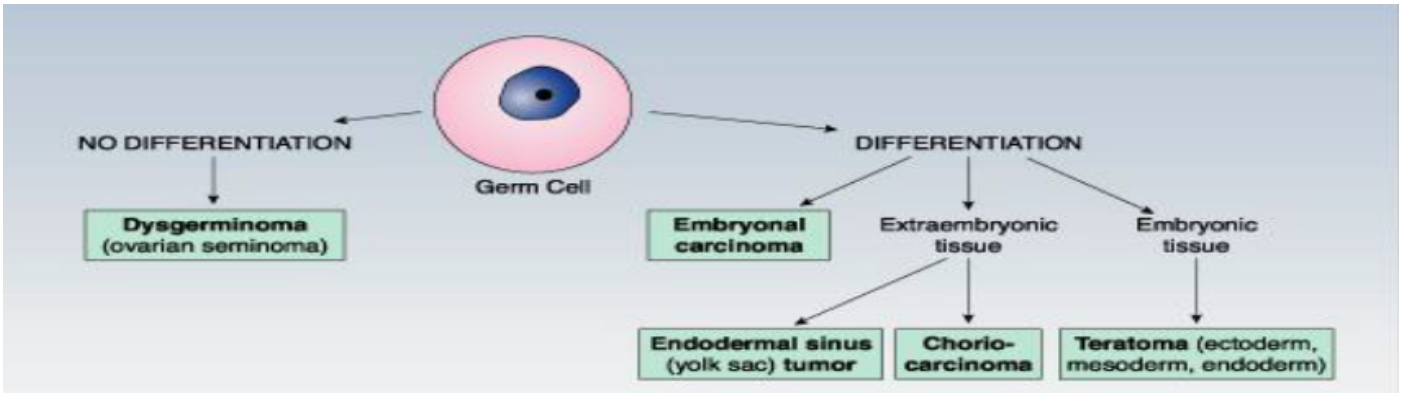
- Represent 5% of all ovarian cancer .
- Two syndrome are clearly identified:

A. Breast/ovarian cancer syndrome (BRCA gene mutation).
B. Lynch ll syndrome or hereditary non polyposis colorectal cancer (colorectal, endometrial, stomach, small bowel, breast ,pancreas and ovarian cancer).

❖ Germ Cell Tumors

- Originate from germ cells.
- Mostly present at stage 1 due to alarming symptoms such as bleeding and pain.

- **Histology:**
  1. Teratoma (most common. they usually twist, risk is higher during pregnancy).
     A. Benign cystic (dermoid cysts)
     B. Solid immature
     C. Monodermal – struma ovarii, carcinoid
  2. Dysgerminoma
  3. Yolk sac tumor (Endodermal sinus tumor).
  4. Choricarcinoma
  5. Mixed germ cell tumor



A. Dermoid Cyst (Benign Cystic Teratoma)

- They are rarely large, 15% are bilateral
- They are the most common neoplasms in the reproductive age
- The contain tissues from: ectoderm, endoderm, and mesoderm
- 1% of theses tumors may undergo malignant degeneration

B. Malignant Germ Tumors: Not common -only 3% of ovarian cancer.

1. Malignant Teratoma (Immature Teratoma)

- Primitive neuroepithelium with multiple neural tubes

2. Dysgerminoma

- 2% of all ovarian malignancies
- Most common malignant germ cell tumor
- Affects primarily younger females with the majority in the second and third decades.
- It is the most frequently encountered ovarian malignancy in pregnancy
- May result in gonadal dysgenesis
- An excellent prognosis. Highly radiosensitive.
- Tumor marker: LDH.

3. Endodermal Sinus Tumor (Yolk Sac Carcinoma)

- It is a highly malignant and clinically aggressive neoplasm
- Most frequently in children and young females
- 20% of malignant germ cell tumors
- Tumor marker: AFP.

4. Choriocarcinoma

- Non-gestational carcinoma.
- Tumor marker: hCG.

❖ Sex Cord – Stromal Tumors

1. Granulosa-Cell Tumor

- Hormonally active tumor. They produce estrogen. In older women, they will have unopposed estrogen > may lead to endometrial CA.
- The most common estrogenic ovarian neoplasm.
- The adult form in postmenopausal women 5%
- (Associated with endometrial hyperplasia and carcinoma) We always take a biopsy
- The juvenile type occurs in the first two decades (precocious sexual development)
- Late recurrence
- Tumor marker: Inhibin

2. Thecoma Fibroma

- Functional tumors producing estrogen
- It occur in postmenopausal women
- Endometrial hyperplasia or carcinoma
- Solid tumor
- May be associated with Meig's syndrome

3. Sertoli-Leydig cell tumors

- It occurs predominantly in young women.
- Commonly androgenic cause defeminization of women manifested as breast atrophy, amenorrhea, and loss of hair and hip fat , to virilization with hirsutism.

❖ Metastatic Ovarian Tumor

- About 3% of malignant tumors in the ovary are metastatic
- The most common primary site is the breast followed by the large intestine, stomach, and other genital tract organs

➢ Krukenberg tumor

- Is applied to the uniform enlargement of the ovaries
- (Bilaterally)
- The commonest primary site is the stomach followed by the colon.

❖ Staging

	Stage I (Growth is limited to ovaries)	**Stage II** (Extension to pelvis)	**Stage III** (Abdomen)	**Stage IV** (Metastasis)
A	Growth limited to 1 ovary, no ascites, no tumor on external surface, capsule intact	Extension and/or metastases to the uterus or tubes	Tumor grossly limited to pelvis, negative lymph nodes but histological proof of microscopic disease on abdominal peritoneal surfaces	Distant metastases; pleural effusion must have a positive cytology to be classified as stage IV; parenchymal liver metastases equals stage IV
B	Growth limited to both ovaries, no ascites, no tumor on external surface, capsule intact	Extension to other pelvic tissues	Confirmed implants outside of pelvis in the abdominal peritoneal surface; no implant exceeds 2 cm in diameter and lymph nodes are negative	
C	Tumor either stage Ia or Ib but with tumor on surface of one or both ovaries, ruptured capsule, ascites with malignant cells or positive peritoneal washings	Stage IIa or IIb but with tumor on surface of one or both ovaries, ruptured capsule, ascites with malignant cells or positive peritoneal washings	Abdominal implants larger than 2 cm in diameter and/or positive lymph nodes	

❖ Management Of Ovarian Neoplasia

1. Observation. (in physiological cyst)
2. Surgical intervention: Laparoscopy or laparotomy.
3. Cysstectomy.
4. Oopherectomy.

- The standard treatment for ovarian cancer start with staging and cytoreductive surgery.
- For post operative treatment, chemotherapy is indicated in all patients with ovarian cancer except those patients with stage 1 and low risk characteristics.

➢ **The 5-year survival rates are as follows:**

- Stage I - 73%
- Stage II - 45%
- Stage III - 21%
- Stage IV - Less than 5%