

Ovarian Pathology

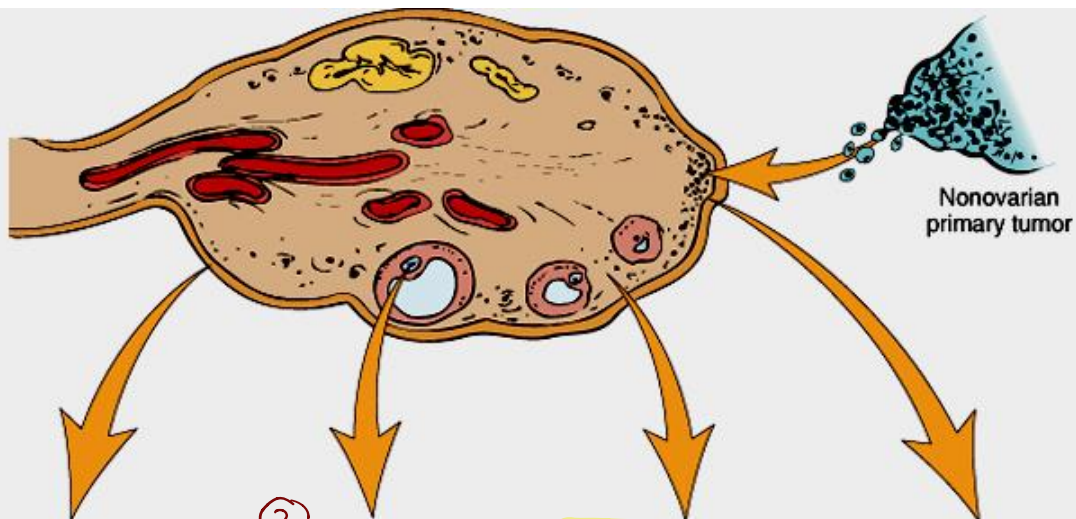
Modified by: Nour Hussein

Ovarian Neoplastic Diseases

- ▶ 5th most common cancer in women. *it is common*
- ▶ 5th leading cause of cancer death in women.
- ▶ 3 Origins of primary ovarian tumors:
 - 1- **surface (coelomic) epithelium**
 - 2- **germ cells**
 - 3- **sex cord/stromal cells.**
- ▶ Each of these cell types gives rise to a variety of tumors

Ovarian Neoplasms

this picture is very important.



Histology
Primary
Ovarian tumor

ORIGIN	① SURFACE EPITHELIAL CELLS (Surface epithelial-stromal cell tumors)	② GERM CELL	③ 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	Adults 20+ years	0–25+ years children.	All ages	Variable
Types	<ul style="list-style-type: none"> • Serous tumor • Mucinous tumor • Endometrioid tumor • Clear cell tumor • Brenner tumor • Cystadenofibroma 	<ul style="list-style-type: none"> • Teratoma • Dysgerminoma • Endodermal sinus tumor • Choriocarcinoma 	<ul style="list-style-type: none"> • Fibroma • Granulosa-theca cell tumor • Sertoli-Leydig cell tumor 	


Pathogenesis-familial cases

- ▶ Risk factors: **nulliparity** and **family history**.
- ▶ ?? use of OCPs may reduce risk.
- ▶ Only 5%-10% are familial
- ▶ molecular pathogenesis: mutations in ***BRCA* 1 and 2 genes**

Pathogenesis- sporadic cases

- ▶ *BRCA* mutations: 10% of sporadic cases
- ▶ other important molecular pathways:
- ▶ ***p53*** (50%)
- ▶ **HER2/NEU** over-expression (35%)
- ▶ **K-RAS** protein over-expression (30%)
(mucinous)

SURFACE EPITHELIAL TUMORS-types:

- ▶ **1- Serous**
 - ▶ **2- Mucinous**
 - ▶ **3- Endometrioid**
 - ▶ **4- Clear cell**
 - ▶ **5- Brenner**
-
- ▶ **All types include benign, borderline, and malignant tumors**
- 

1- Serous Tumors

- ▶ the most frequent ovarian tumors.
- ▶ Include: 60% benign, 15% borderline, and 25% malignant.
- ▶ the most common malignant ovarian tumors (60%)
- ▶ Genetics:
- ▶ ***BRAF*** and ***K-RAS*** mutations → borderline & low grade cancers
- ▶ ***p53*** and ***BRCA1*** mutations → High-grade serous carcinomas

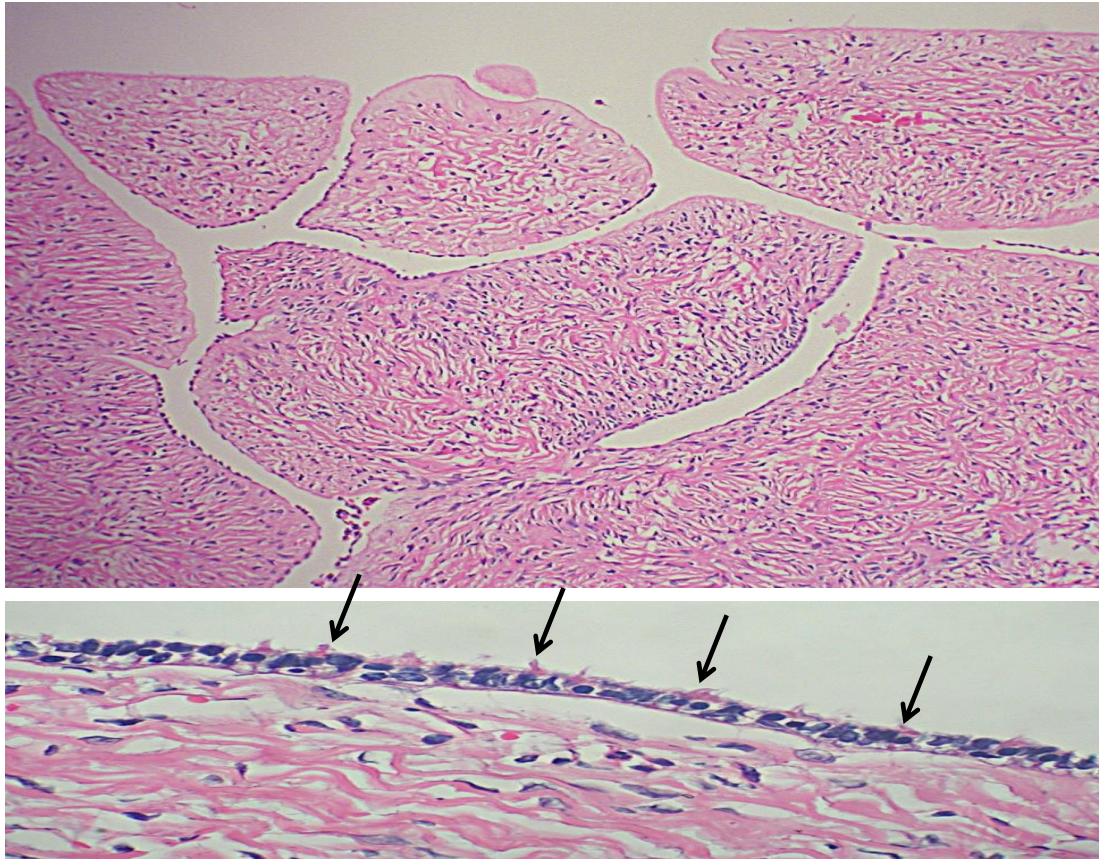
Morphology

- ▶ **Benign serous tumors:**
- ▶ **large cystic**, (30 cm).
- ▶ May be bilateral.
- ▶ **filled with a clear serous fluid** *Name → Serous*
- ▶ **single layer of columnar epithelium**. Some cells are **ciliated**.
- ▶ **Psammoma bodies** (laminated calcified concretions) are common in tips of papillae of **all serous tumors**

SEROUS CYSTADENOMA

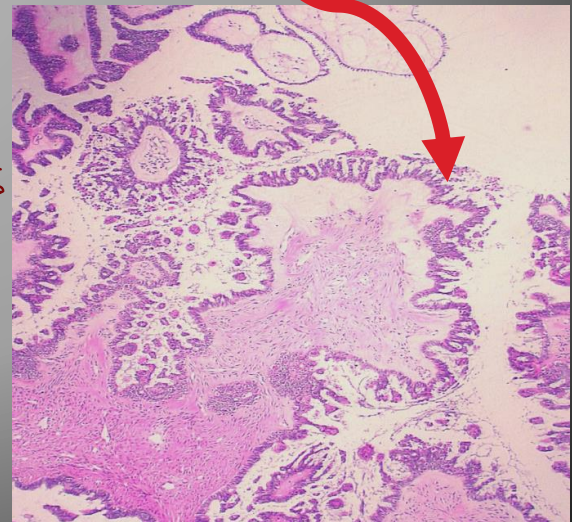


Benign serous tumors:



Borderline serous tumors

- ▶ more **complex architecture**
- ▶ **mild cytologic atypia**
- ▶ **but no stromal invasion**. *which is why its not malignant*
- ▶ might be associated with peritoneal implants
- ▶ **Prognosis intermediate between benign and malignant types** (survival with **peritoneal metastases 75%**)

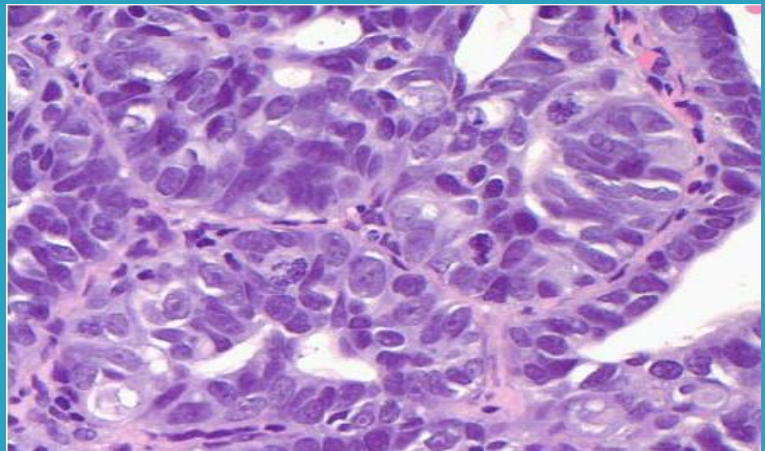
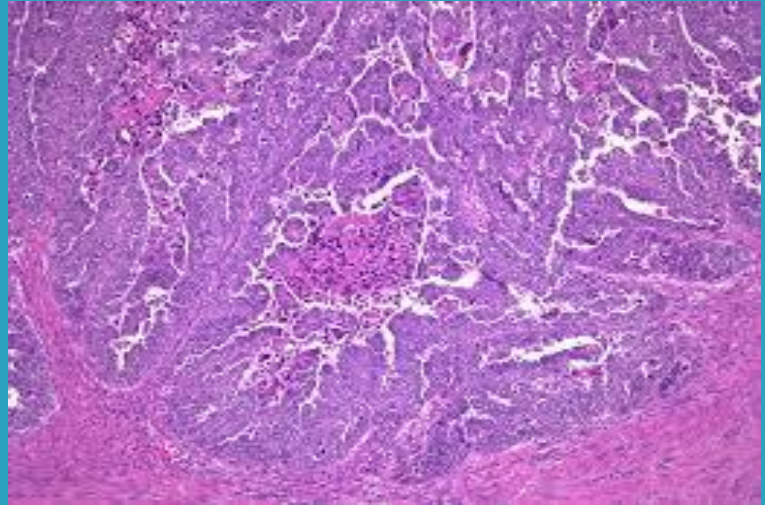


Papillary Projections

Malignant serous carcinoma

Anaplasia of cells
and invasion of
the stroma.

prognosis poor,
depends on stage
at the time of
diagnosis.

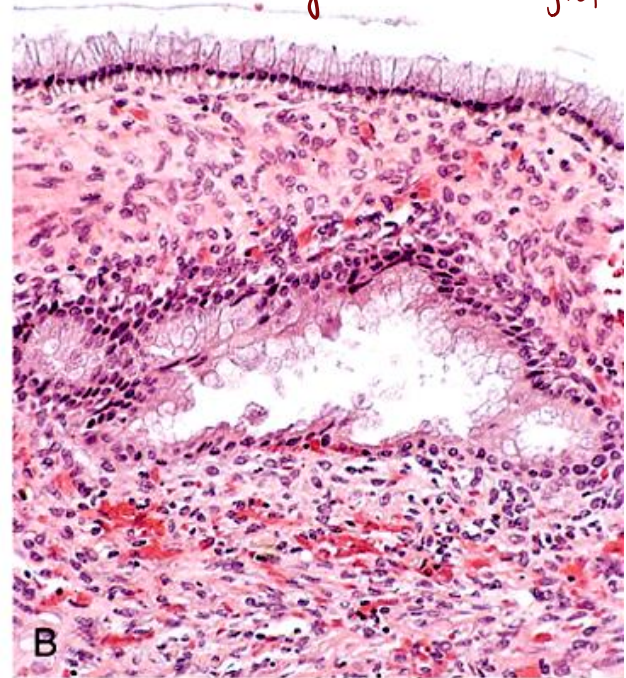


2- Mucinous ovarian tumors

- ▶ **mucin-secreting cells.**
- ▶ Depending on the architectural complexity:
- ▶ **80% benign; 10% borderline; 10% malignant** (*cystadenocarcinoma*)
- ▶ **Usually large and multilocular.** *even the benign are very large. + contains cysts*
- ▶ **psammoma bodies not found**
- ▶ stage is major determinant of prognosis

Mucinous ovarian tumors

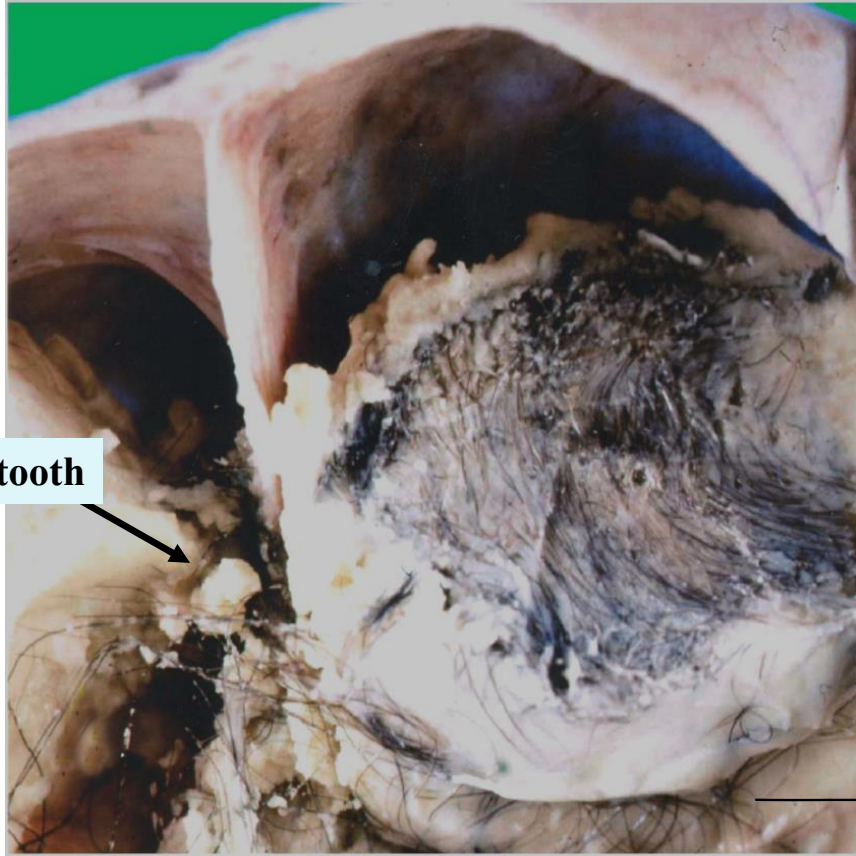
Under Microscope:-
Mucin producing
cells similar to
GIT cells.
• Large bluish cytoplasm



Germ cell tumors → Ability to differentiate to multiple tissue types.

- ▶ ***Benign (Mature) Cystic Teratomas:***
- ▶ totipotential germ cells into mature tissues of all three germ cell layers
- ▶ Most discovered incidentally
- ▶ 90% unilateral
- ▶ Grossly: cyst filled with sebaceous secretion and hair; bone and cartilage; epithelium, or teeth.
- ▶ 1% → malignant transformation
- ▶ torsion (10% to 15% of cases)

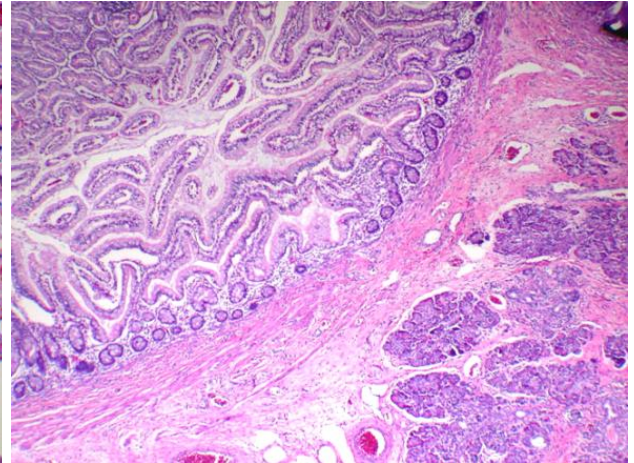
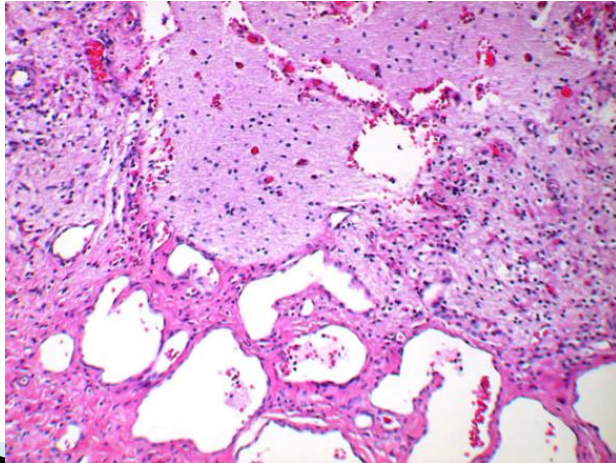
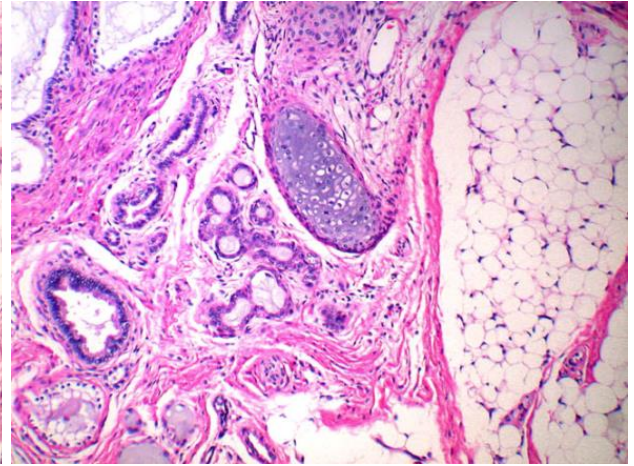
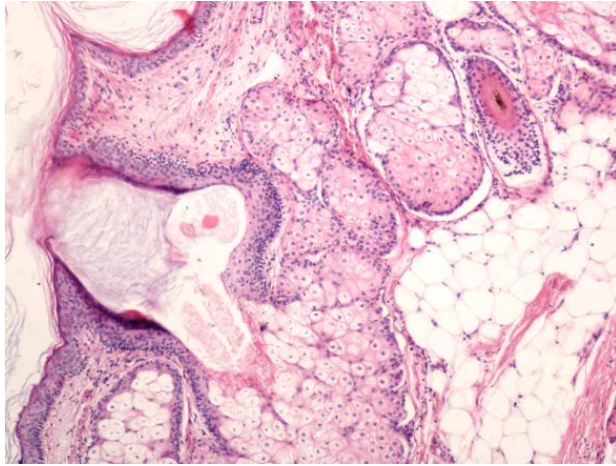
Benign (Mature) Cystic Teratomas



tooth

→ Hair Structure

Benign (Mature) Cystic Teratomas



Clinical Correlations for All Ovarian Tumors

Symptoms

Symptoms become apparent
in severe + late stages
Small masses are asymptomatic

- ❖ clinical presentation of all is similar:
Diarrhea, constipation, fullness, vomiting
- ❖ pain, gastrointestinal complaints, urinary frequency;
rarely torsion producing severe abdominal pain
mimicking an "acute abdomen."
- ❖ Ascites (in Fibromas and malignant serous tumors).
Some of them are
- ❖ Functioning ovarian tumors often come to attention
because of hormonal production (Estrogens or
androgens).

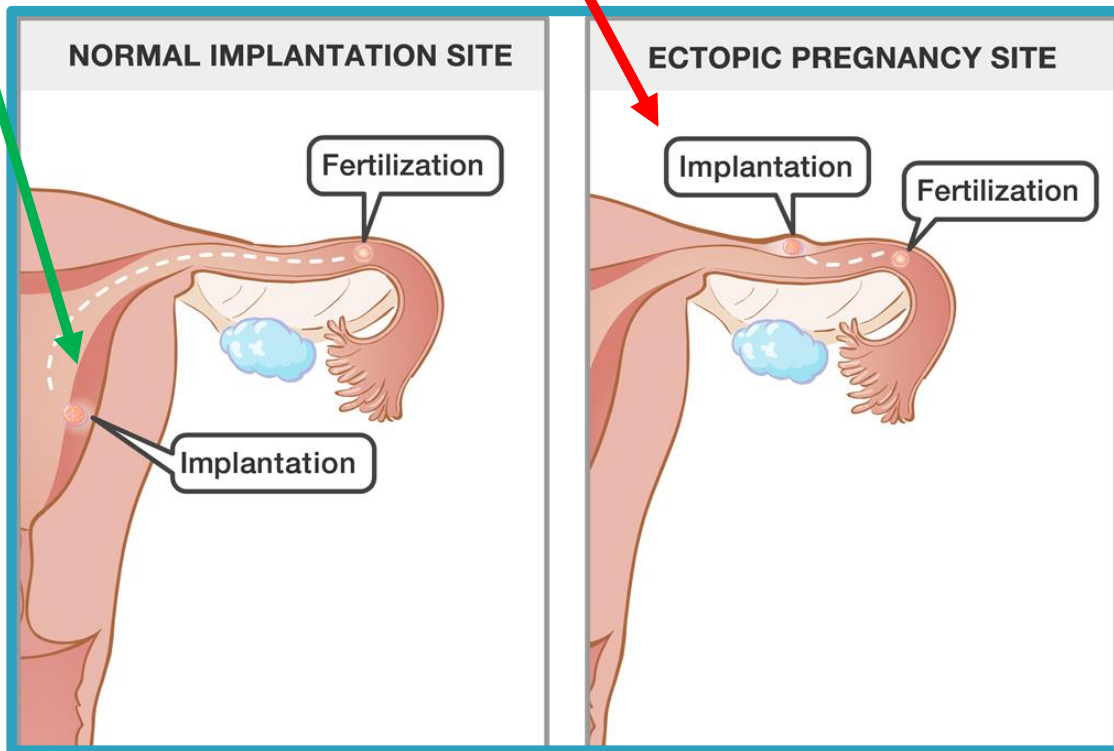
-Video Ended here.

Pathology of the Fallopian tubes

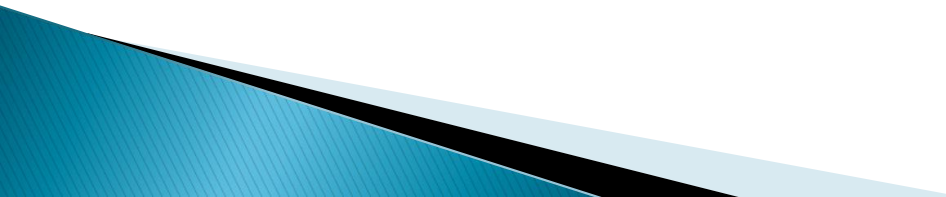
ECTOPIC PREGNANCY

- ▶ implantation of the fertilized ovum outside uterus
- ▶ Incidence: 1%
- ▶ 90% of cases → in fallopian tubes
- ▶ other sites: ovaries, abdominal cavity
- ▶ Predisposing factors: tubal obstruction (50%) PID; tumors; endometriosis; **IUCD**..
- ▶ In 50% : no anatomic cause can be demonstrated.

Normal versus ectopic pregnancy



ECTOPIC PREGNANCY

- ▶ Early: development of the embryo and placental tissue
 - ▶ Later: the placenta burrows through tubal wall causing **intratubal hematoma (hematosalpinx) and intraperitoneal hemorrhage.**
 - ▶ Rupture of an ectopic pregnancy: intense abdominal pain (**acute abdomen**), often followed by shock.
 - ▶ **Prompt surgical intervention is necessary.**
- 

Ectopic pregnancy- Management



Tubal malignancies

- ▶ considered rare.
- ▶ **most common histo. type is serous carcinoma.**
- ▶ increased in women with **BRCA mutations** (In studies of prophylactic oophorectomies:10% →occult foci of malignancy in fimbria).
- ▶ **Because of access to peritoneal cavity**, fallopian tube carcinomas frequently spread to omentum and peritoneal cavity at time of presentation (advanced).