

# Ovarian Neoplasms

# Ovarian Neoplasms- Introduction

- Common neoplasms.
- 80% are benign – young (20-45)
- 20% are Malignant - older ( $>40$ )
- 6% of all cancers in women.
- 50% deaths due to late detection.

# OVARIAN NEOPLASM

- NON-NEOPLASTIC functional cyst
- Primary
- Secondary

# Non-neoplastic

- Corpus luteal:
  - excessive bleeding into corpus luteum
  - Cyst filled with blood
  - Delayed period + pain
  - Usually the following period is heavy

# Non-neoplastic

- Granulosa-theca lutein cyst:
  - in molar pregnancy or part of hyperstimulation syndrome
  - due to excessive gonadotrophin
- Polycystic ovary
- Endometriotic cyst

# Risk Factors

- Null parity
- Gonadal Dysgenesis
- Family History
- Ovarian cancer genes
  - BRCA1 (17q12) & BRCA2(13q12)  
( Breast & ovary)

# Classification

- Surface epithelial – 65-70%
- stromal – 15-20%
- Germ cell tumors – 5-10%
- Metastatic tumors – 5%

# Surface Epithelial tumors:

- Coelomic mesothelium.
  - Serous(tubal), Mucinous (Cx) & endo
- Most common primary neoplasms
- 90% of malignant tumors of ovary
- Morphologically
  - Cystic – Cystadenomas
  - Solid/cystic – Cystadenofibromas
  - Solid - adenofibromas



# Surface Epithelial tumors

- **Serous** (tubal)
- **Mucinous** (endocx & intestinal)
- **Endometrioid**
- **Transitional cell - Brenners.**
- **Clear cell**

# Surface Epithelial tumors

**All types can be benign, borderline , or malignant, depending upon;**

- **Benign** ; -
- gross: mostly cystic
- microscopic; fine papillae, single layer covering (no stratification), no nuclear atypia, no stromal invasion)
- ; -

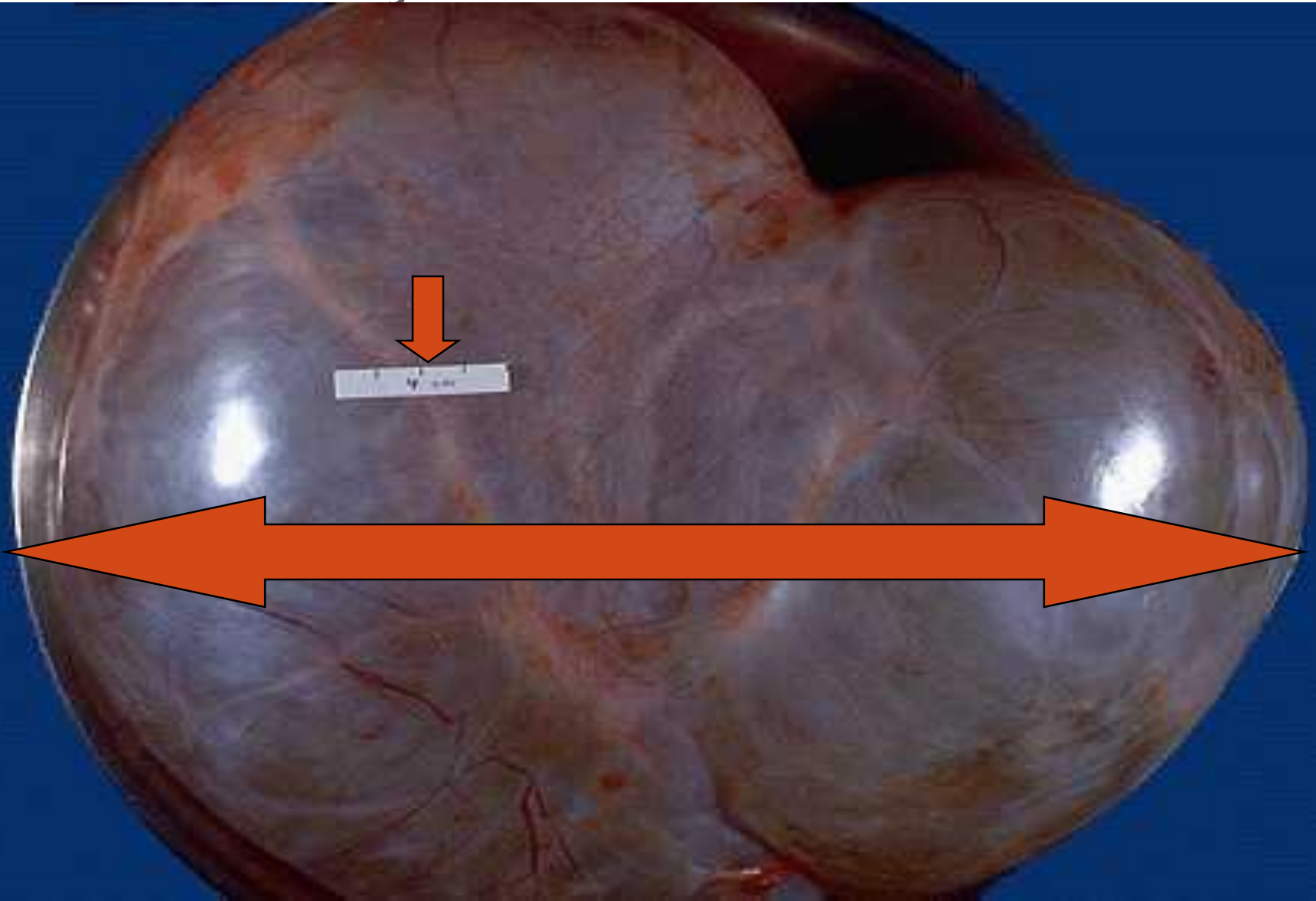
# Surface Epithelial tumors

- **Borderline**
- gross; cystic / solid foci
- microscopic; papillary complexity, stratification, nuclear atypia, no stromal invasion
- **Malignant ; -**
- gross; mostly solid & hemorrhage / necrosis
- microscopic; papillary complexity, stratification, nuclear atypia, stromal invasion

# Serous Tumors:

- Frequently bilateral (30-66%).
- 75% benign/bord., 25% malignant.
- One unilocular cysts, papillary/less solid- **benign/borderline**
- Tall columnar ciliated epithelium.
- Papillary, solid, hemorrhage, necrosis or adhesions — **malignancy**.
- Extension to peritoneum — bad prognosis.

# Serous Cystadenoma



# Bilateral cystadenoma



# Serous Cystadenoma:

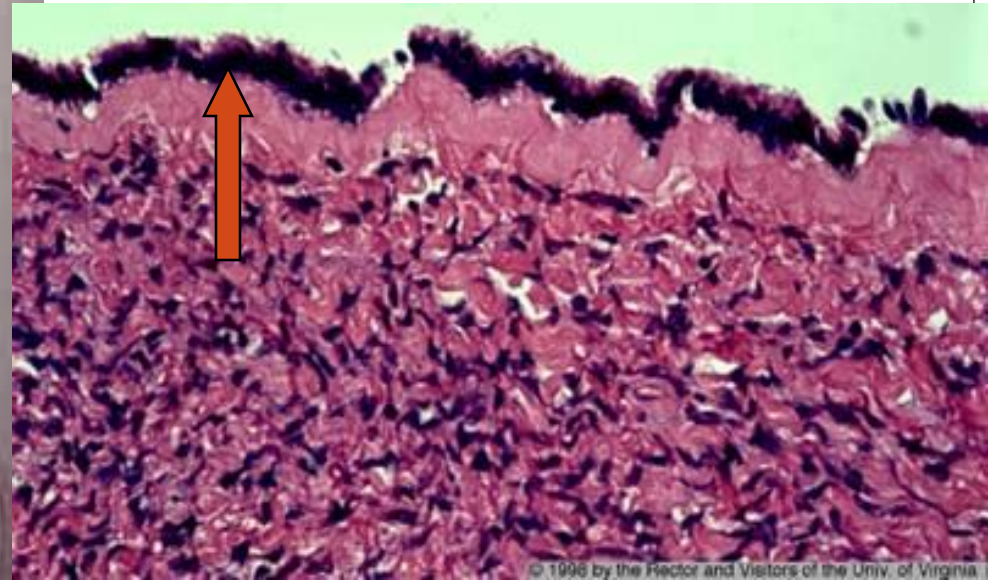




# Serous Cystadenoma

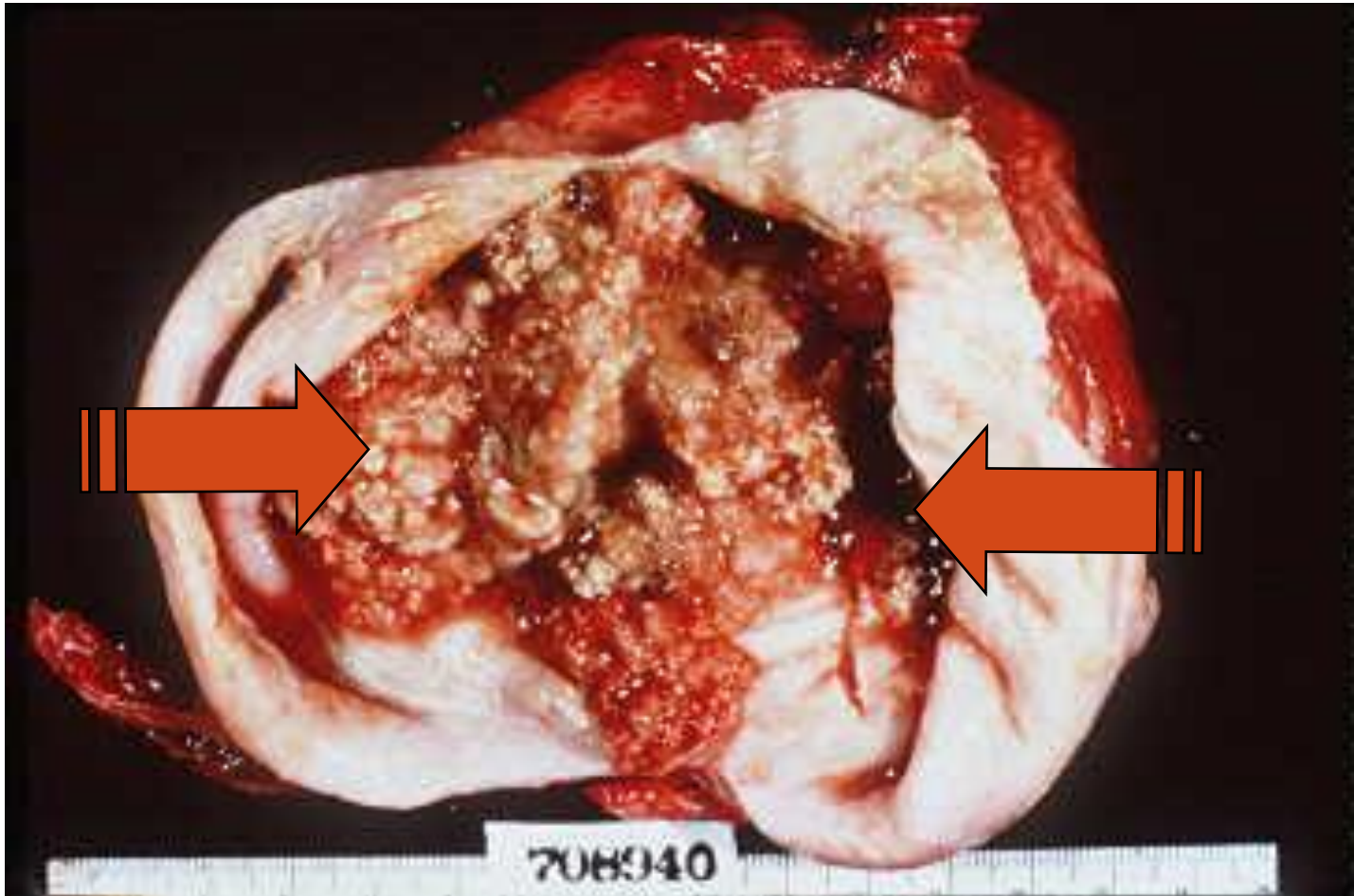


- single layer of columnar ciliated
- Fine papillae





# Papillary serous cystadenoma (solid/cystic)-borderline



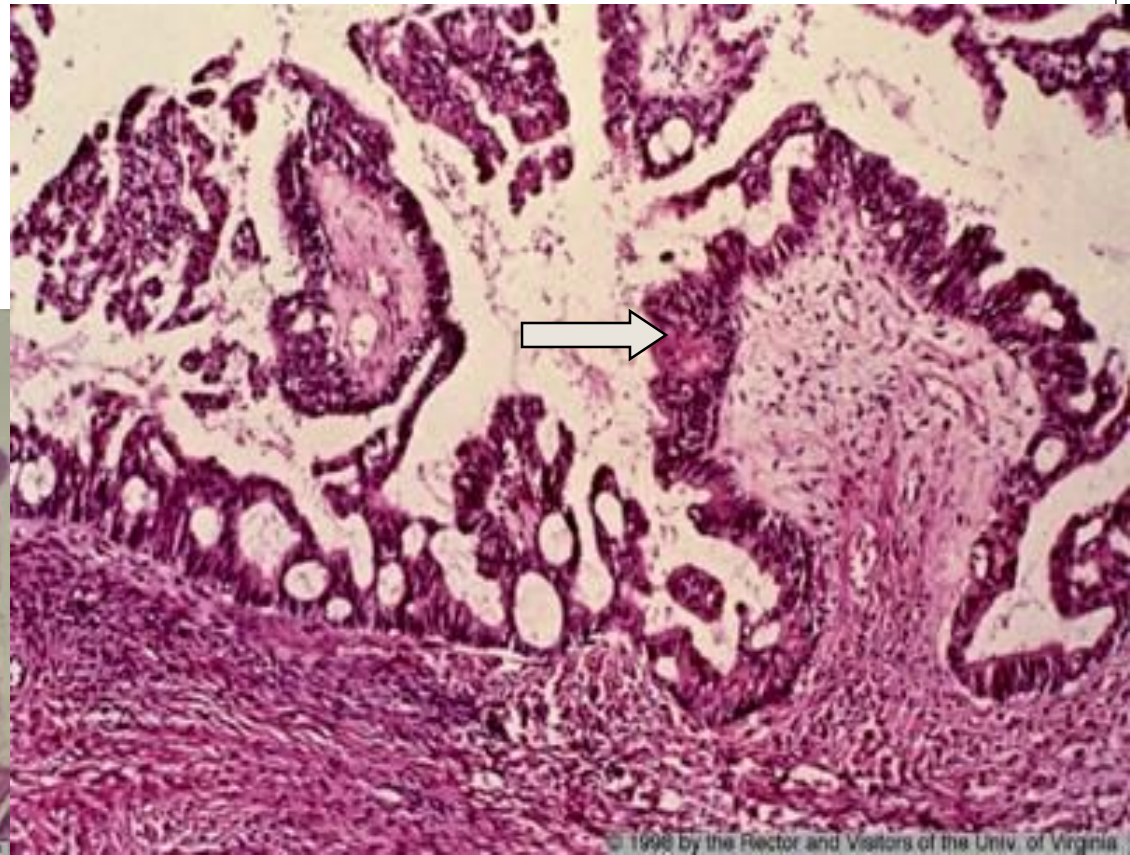
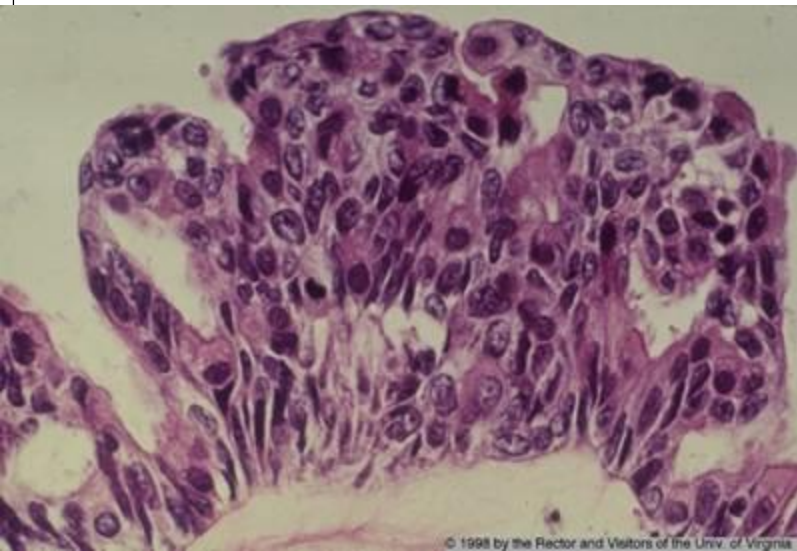
# Papillary cystadenoma (bor)



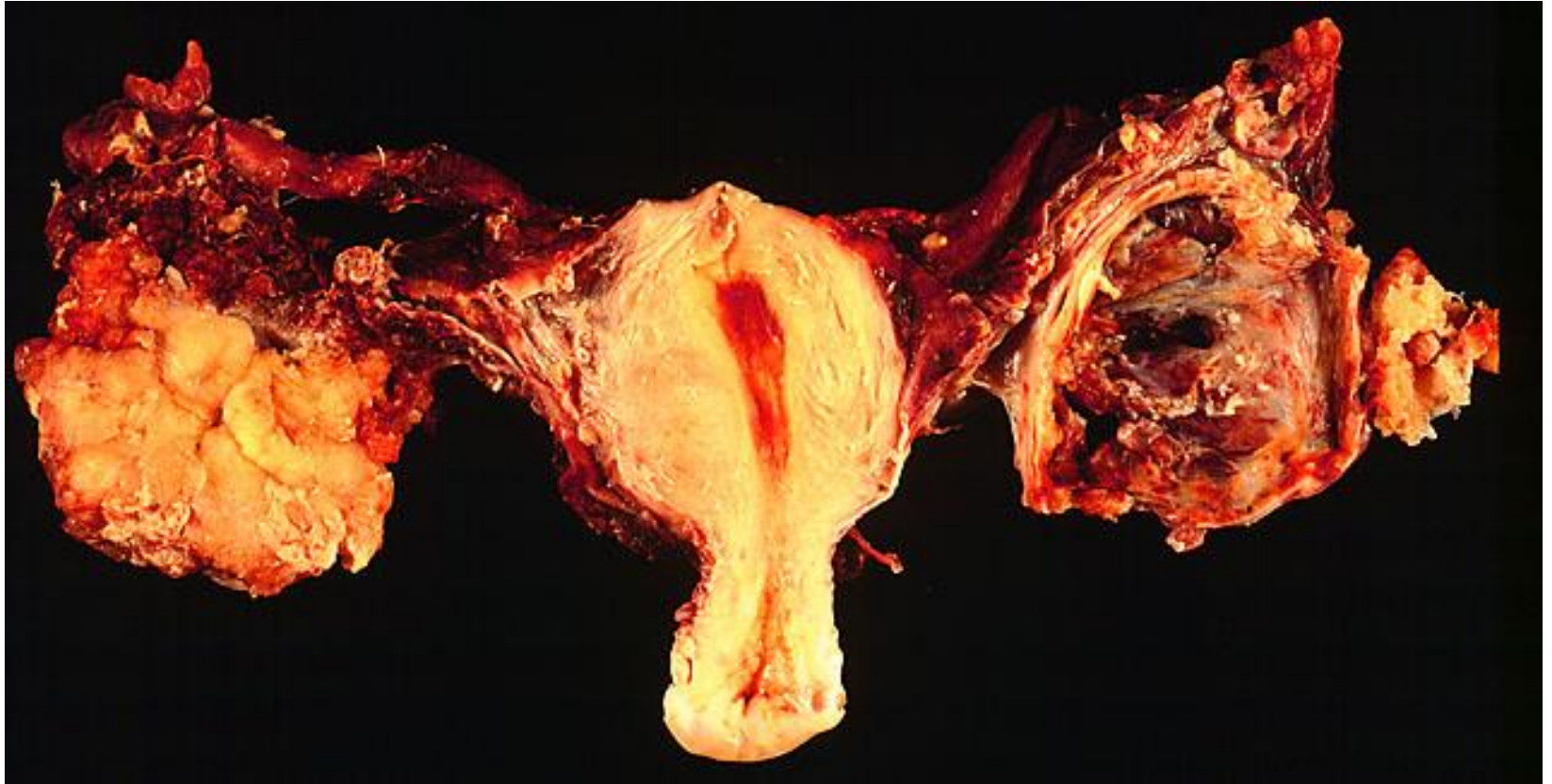


# Papillary cystadenoma (bor)

- Papillary complexity
- Nuclear stratification& atypia
- No stromal invasion



# Serous cystadenocarcinoma – bilateral



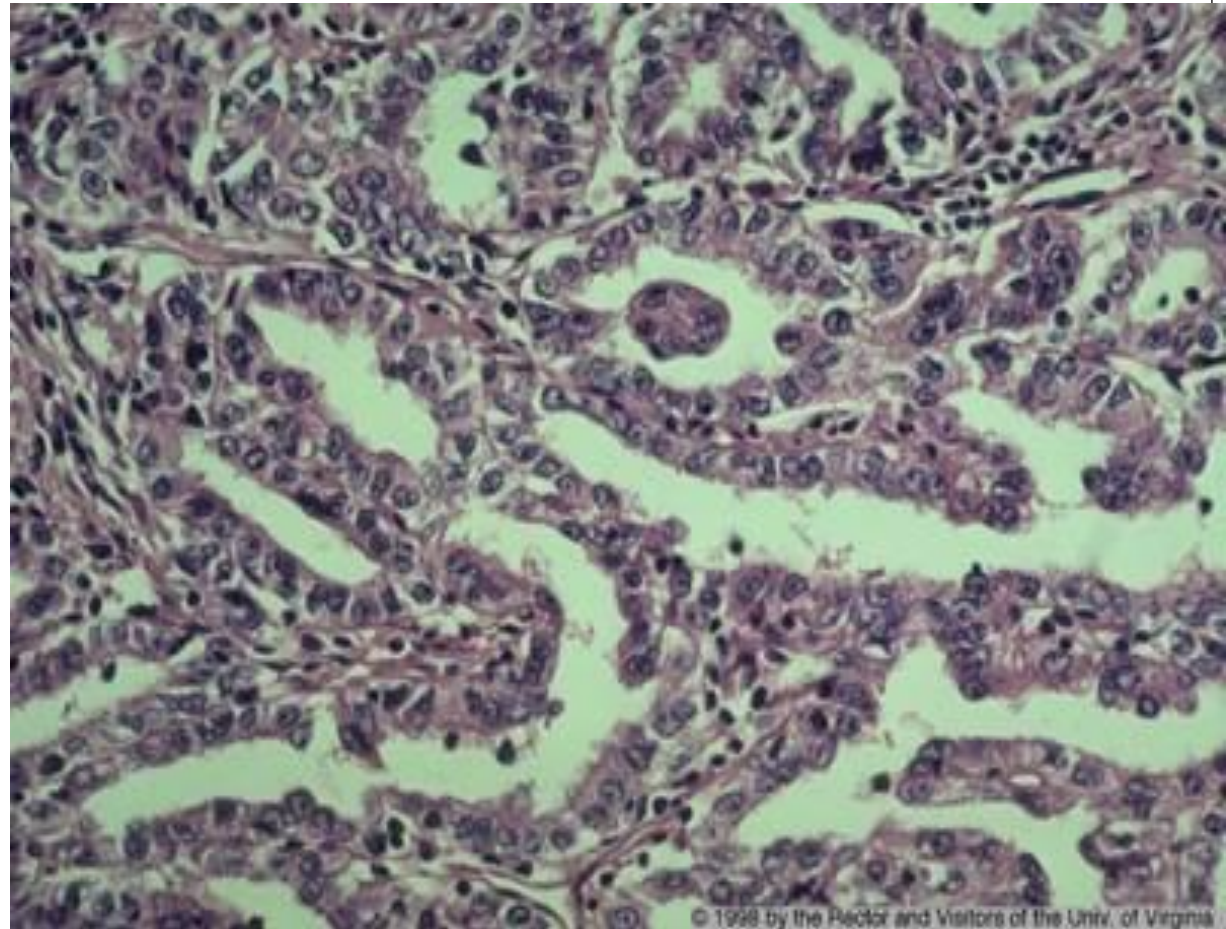


# Serous cystadenocarcinoma



# Serous cystadenocarcinoma

- Papillary complexity
- Nuclear stratification & atypia
- **stromal invasion**
- Psammoma bodies



# Mucinous Tumors:

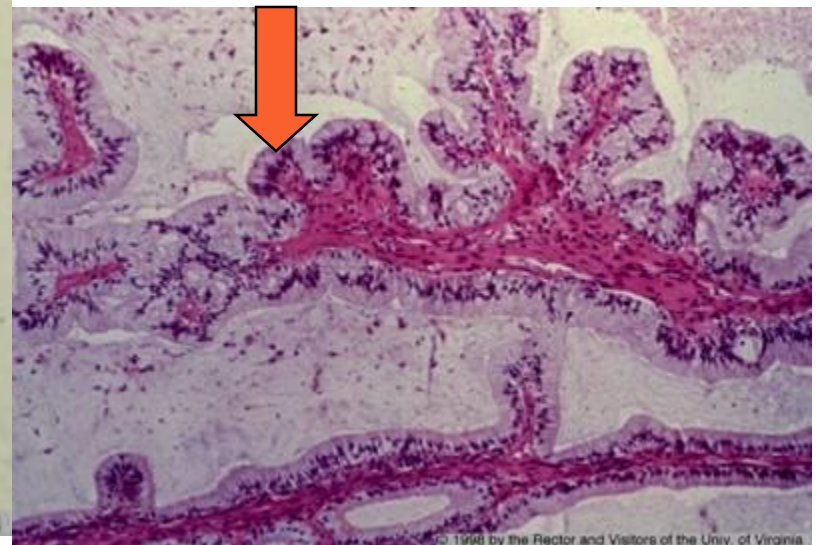
- Less common 25%, very large.
- Rarely malignant - 15%.
- Multiloculated, many small cysts.
- Rarely bilateral – 5-20%.
- Tall columnar, apical mucin.
- Pseudomyxoma peritonei.



# Mucinous cystadenoma



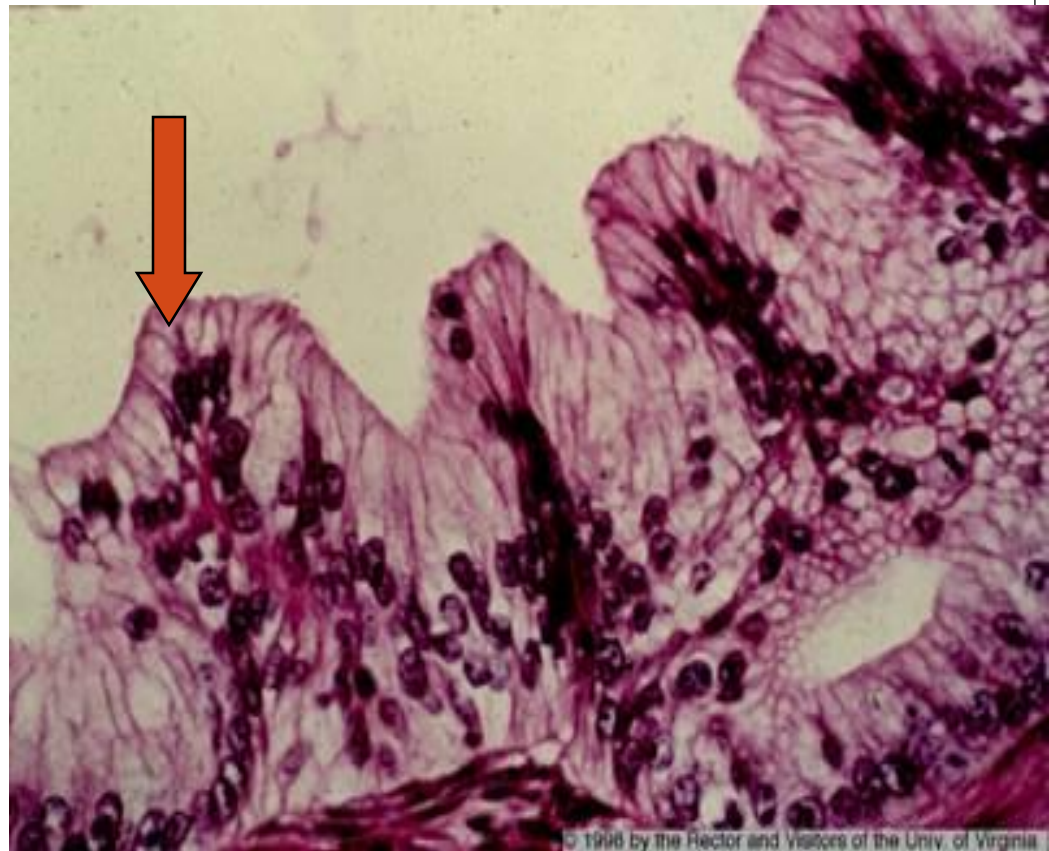
- Multilocular cyst lined by single layer of columnar cells with basally placed nuclei and apical mucin.





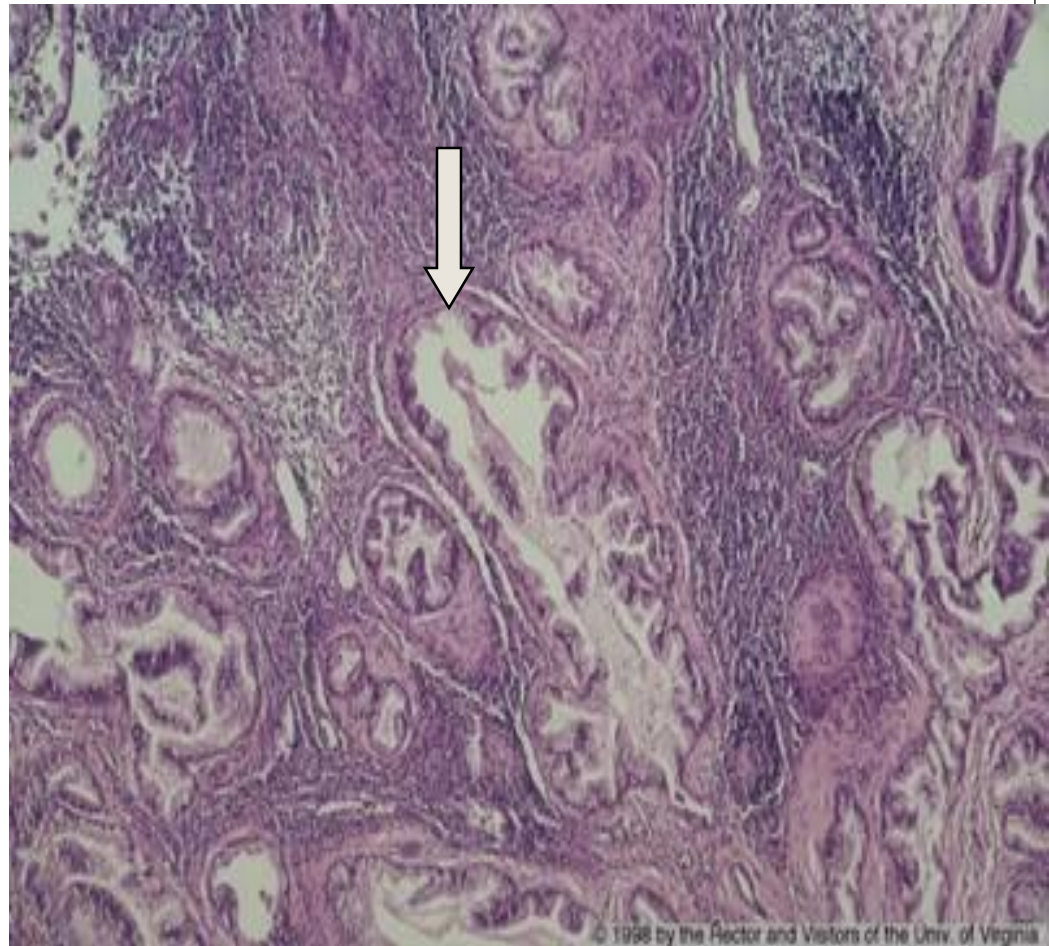
# Mucinous cystadenoma-borderline

- Papillary complexity
- Nuclear stratification & atypia
- No stromal invasion



# Mucinous cystadenocarcinoma

- Papillary complexity
- Nuclear stratification & atypia
- stromal invasion



# Endometrioid tumors

- most are unilateral (40% are bilateral)
- cells look like endometrium even though they are coming from the coelum of the ovary.
- almost all are malignant
- about 20% of all ovarian tumors
- many are associated with endometrial cancer (30%)
- patient may have concurrent endometriosis

# Endometrioid tumors

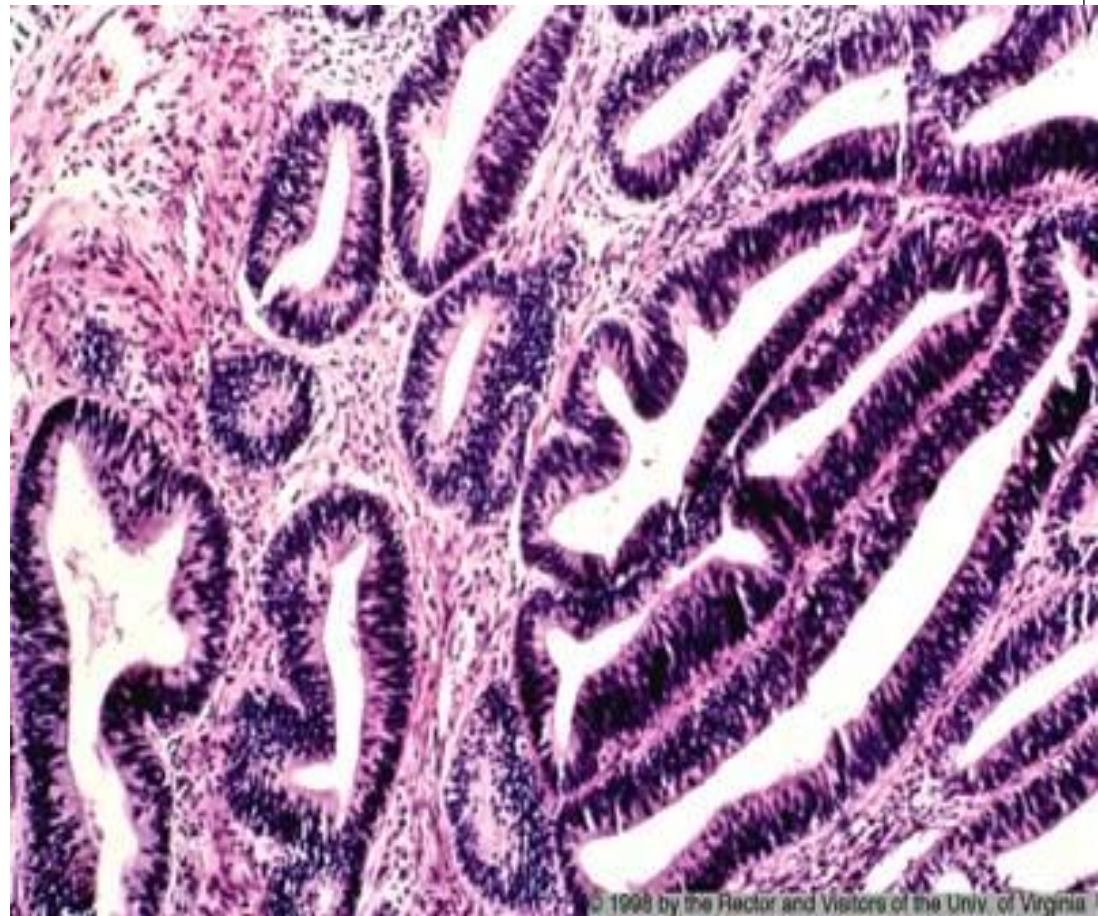
Solid / cyst filled by  
hemorrhage &  
necrosis





# Endometrioid adenocarcinoma

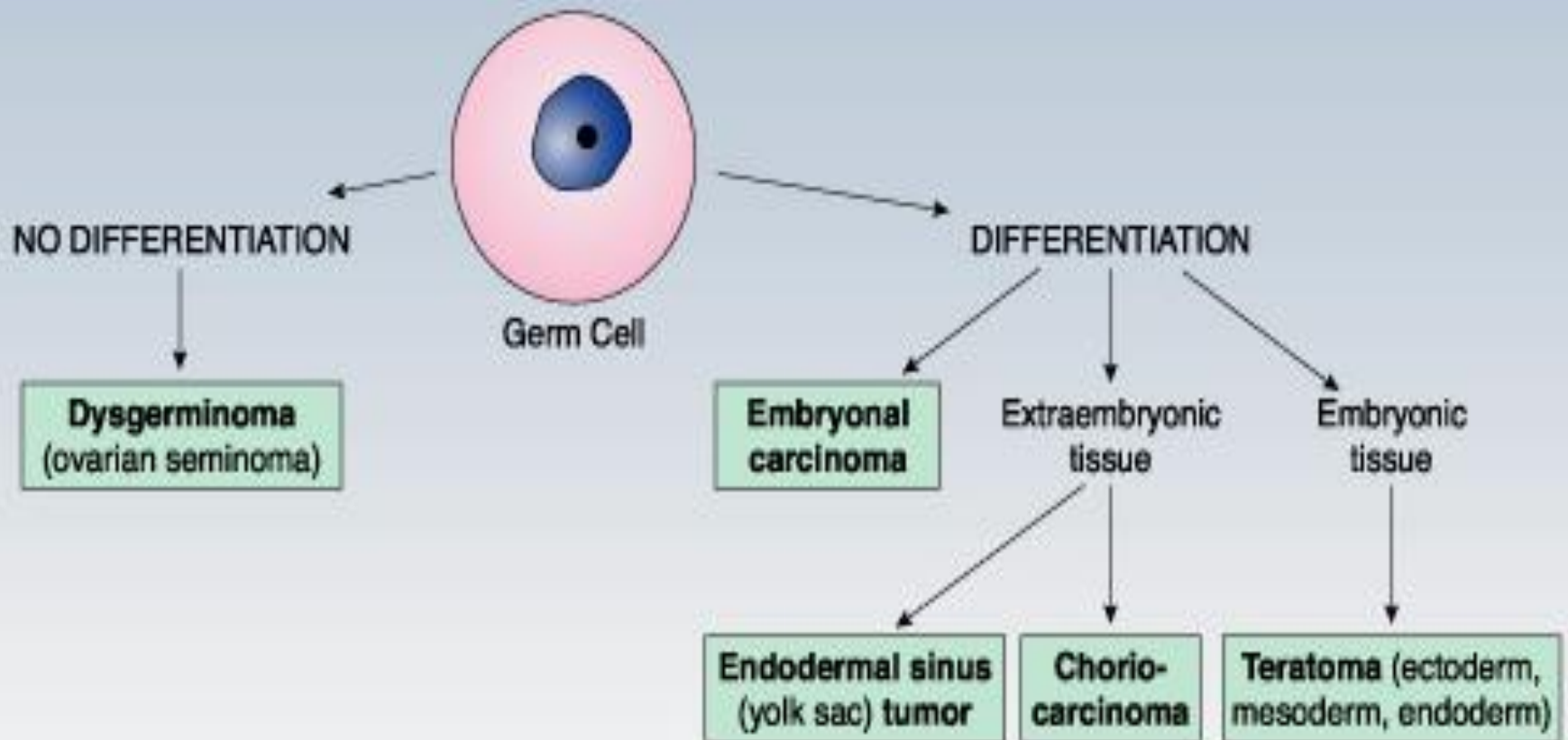
- stromal invasion by irregular malignant endometrial glands



# Clinical course of coelomic surface epithelial tumors

- lower abdominal pain
- abdominal enlargement
- GI tract complaints
- urinary tract complaints
- malignant ones produce ascites
- serosal surfaces are seeded with cancer metastasis
- grow slowly and get very large

# Germ cell tumor- classification



# Germ cell Tumors

- Teratoma
  - Benign cystic (dermoid cysts)
  - Solid immature
  - Monodermal – struma ovarii, carcinoid
- Dysgerminoma
- Yolk sac tumor (Endodermal sinus tumor )
- Choriocarcinoma
- Mixed germ cell tumor



# Dermoid ( Benign cystic teratoma )

- Ectoderm + Mesoderm + Endoderm
- Supradiaphragmatic structures
- Teeth permanent never deciduous
- Teeth canines, molars, incisors  
but never premolars
- No Gonadal tissue
- But assoc. with Granulosa

Theca

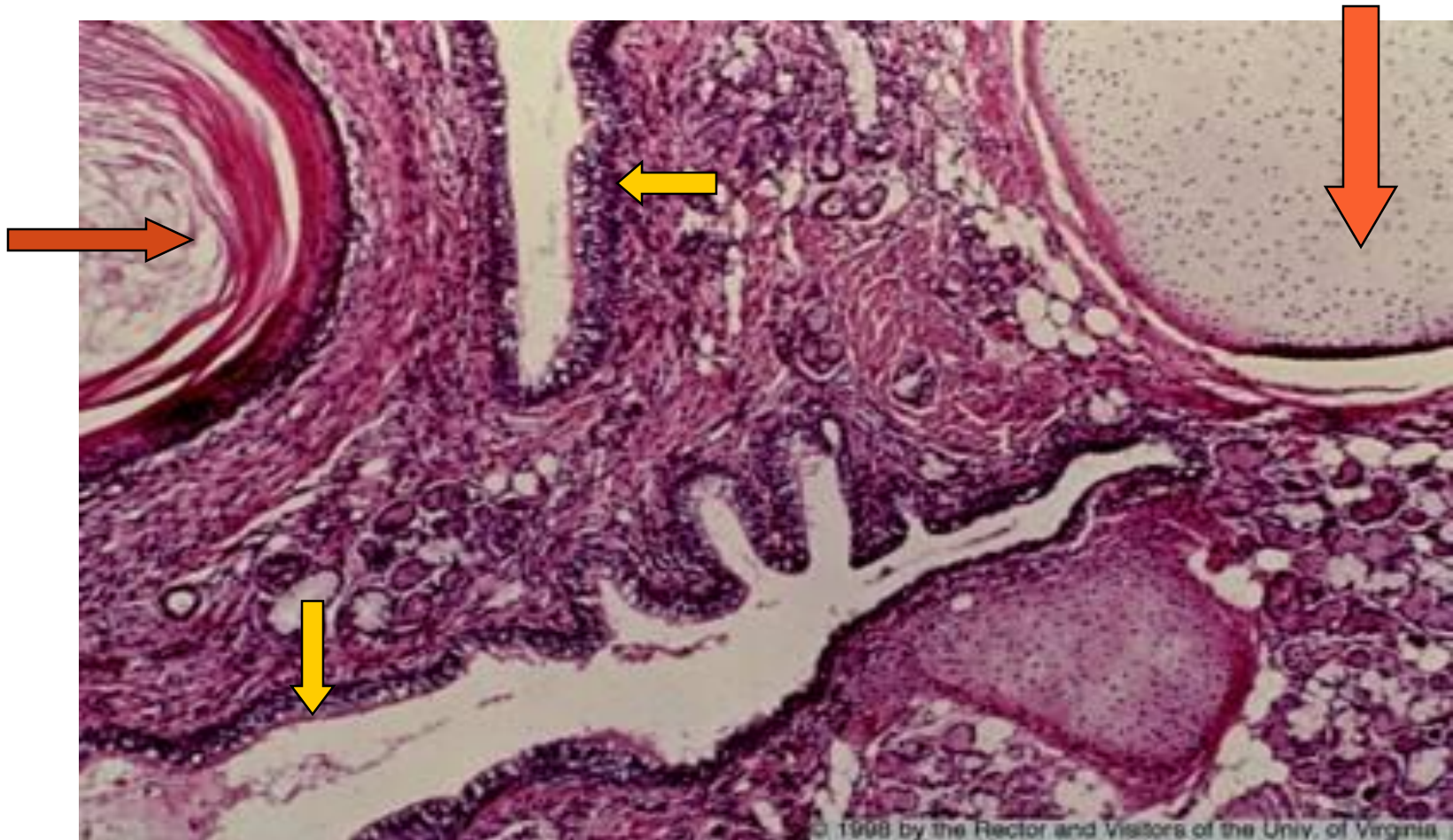
Androblastoma

# Cystic Teratoma (Dermoid Cyst)



cm  
SPECIMEN 55218-83<sup>4</sup> DATE 12-21-83

# Dermoid Cyst

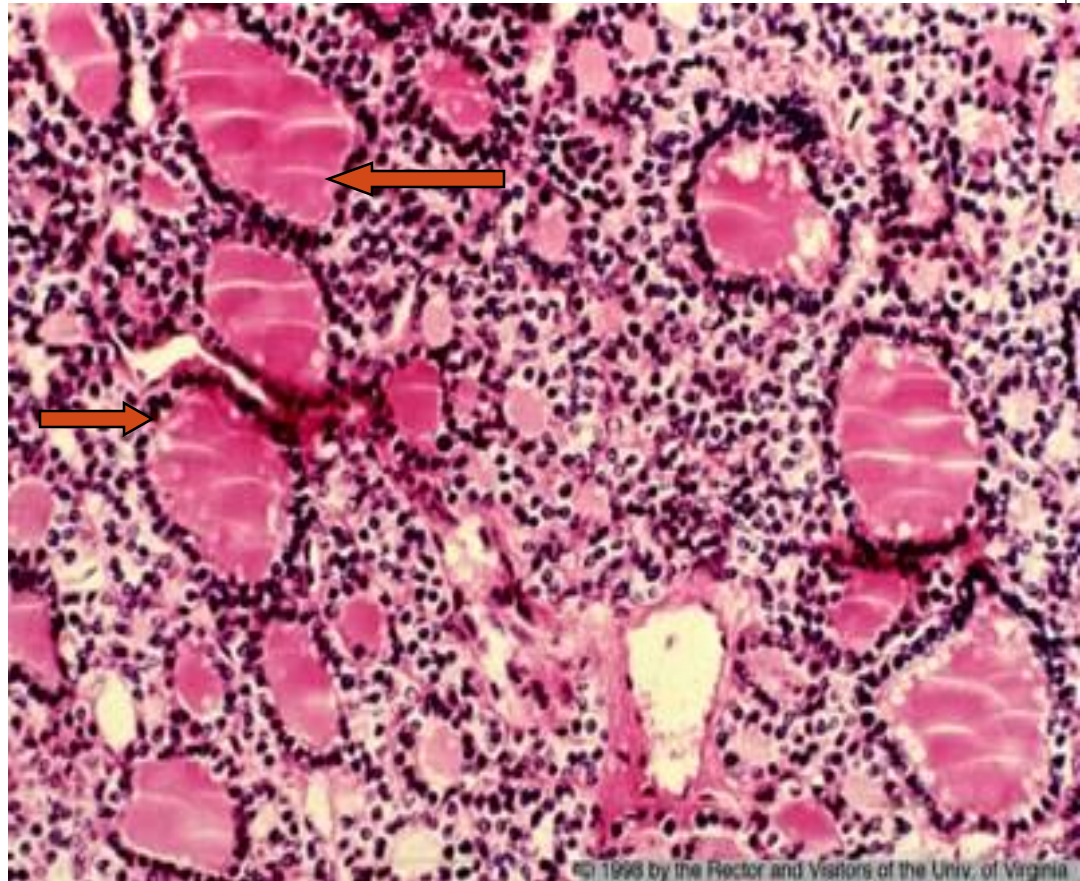




# Monodermal teratomas

- **Struma ovarii:**

composed entirely of  
mature thyroid tissue



# Dermoid ( Benign cystic teratoma )

## Complications

- Torsion 10%
- Rupture 1%
- Infection
- Hemolytic anemia-splenomegaly
- Malignancy

# Immature Teratoma



- Solid/ necrosis & hemorrhage



# Immature Teratoma

- primitive neuroepithelium with multiple neural tubes



# Dysgerminoma

- The ovarian counterpart of the **testicular seminoma**
- 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**
- An excellent prognosis. Highly radiosensitive .



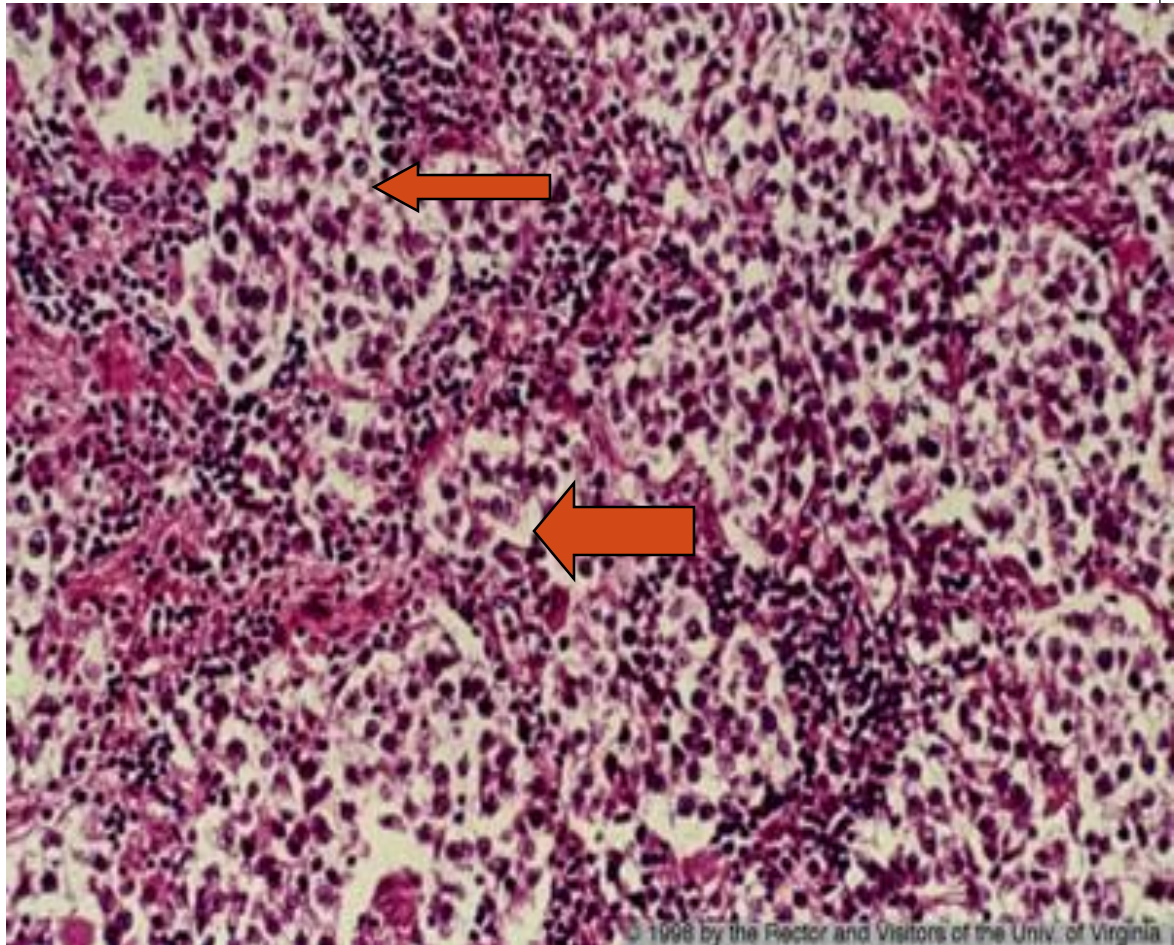
# Dysgerminoma

- Solid/ lobulated mass with foci of hemorrhage



# Dysgerminoma

- sheets of monotonous rounded cells with pale cytoplasm and central nuclei



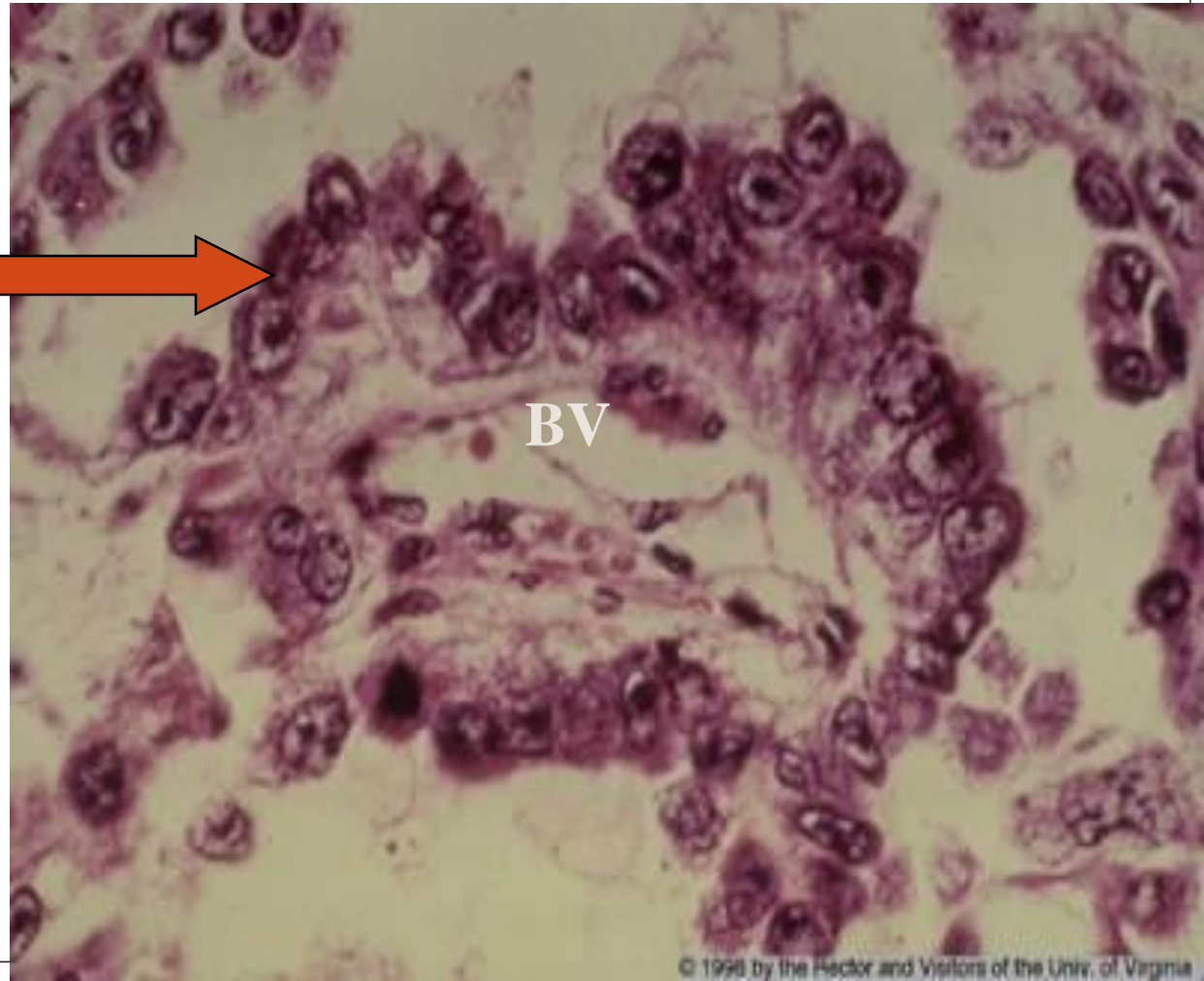
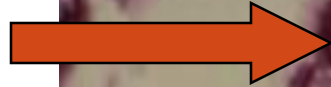
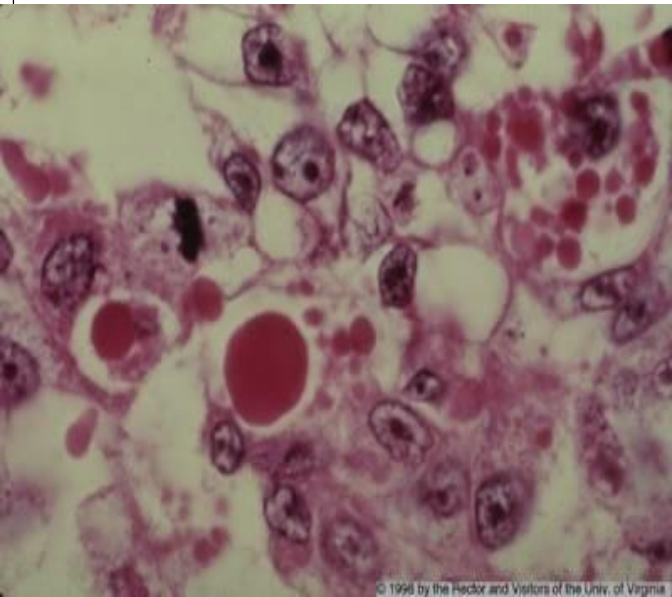
# Endodermal sinus tumor (Yolk sac carcinoma)

- Tumor is a **highly malignant** and clinically aggressive neoplasm
- Most frequently in **children and young females**
- 20% of malignant germ cell tumors.
- Fatal within 2 years of diagnosis



# Endodermal sinus tumor (yolk sac carcinoma)

- Schiller-Duval body



# Sex Cord - Stromal Tumors

- **Granulosa-cell tumor**
- **Thecoma**
- **Fibroma**
- **Sertoli-Leydig cell tumors**

# Granulosa Cell Tumor

- Hormonally active tumor
- The most common estrogenic ovarian neoplasm.
- The adult form occurs mainly in postmenopausal women, associated with endometrial hyperplasia and carcinoma
- The juvenile type occurs in the first two decades, cause precocious sexual development.

# Granulosa Cell Tumor

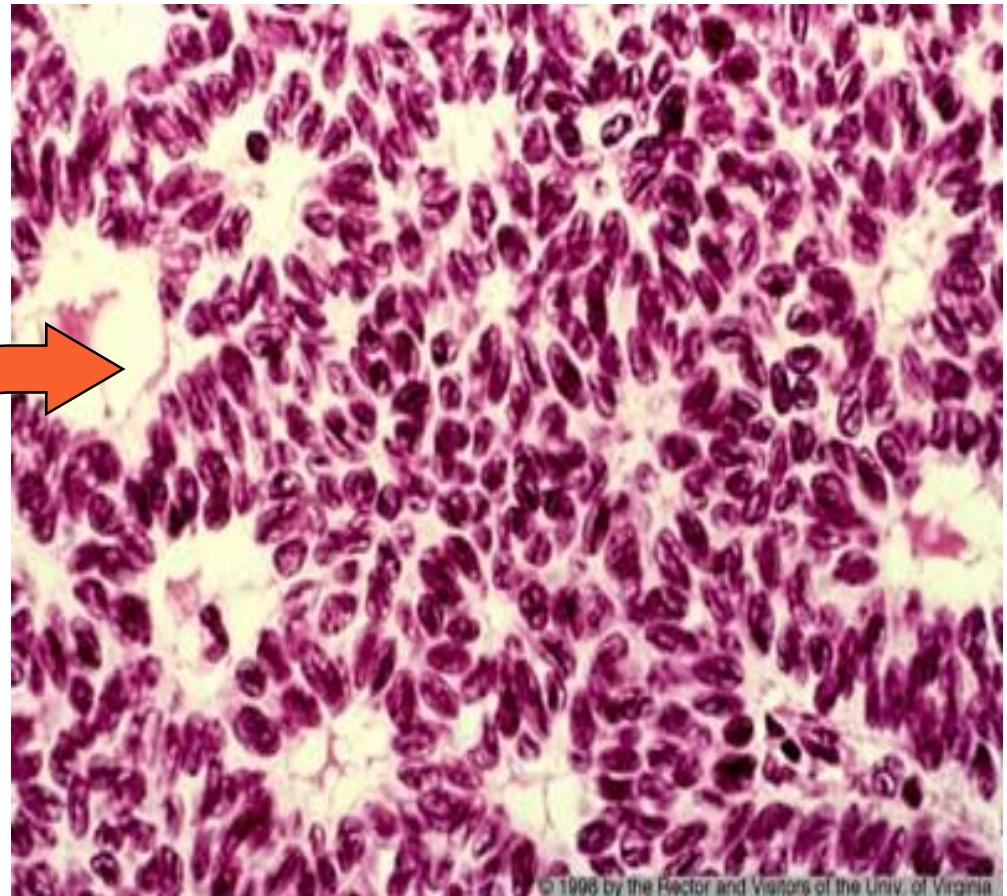
- Solid with hemorrhage





# Granulosa Cell Tumor

- Sheets of granulosa cells containing spaces lined by the cells to give a follicle-like appearance (Call-Exner bodies).



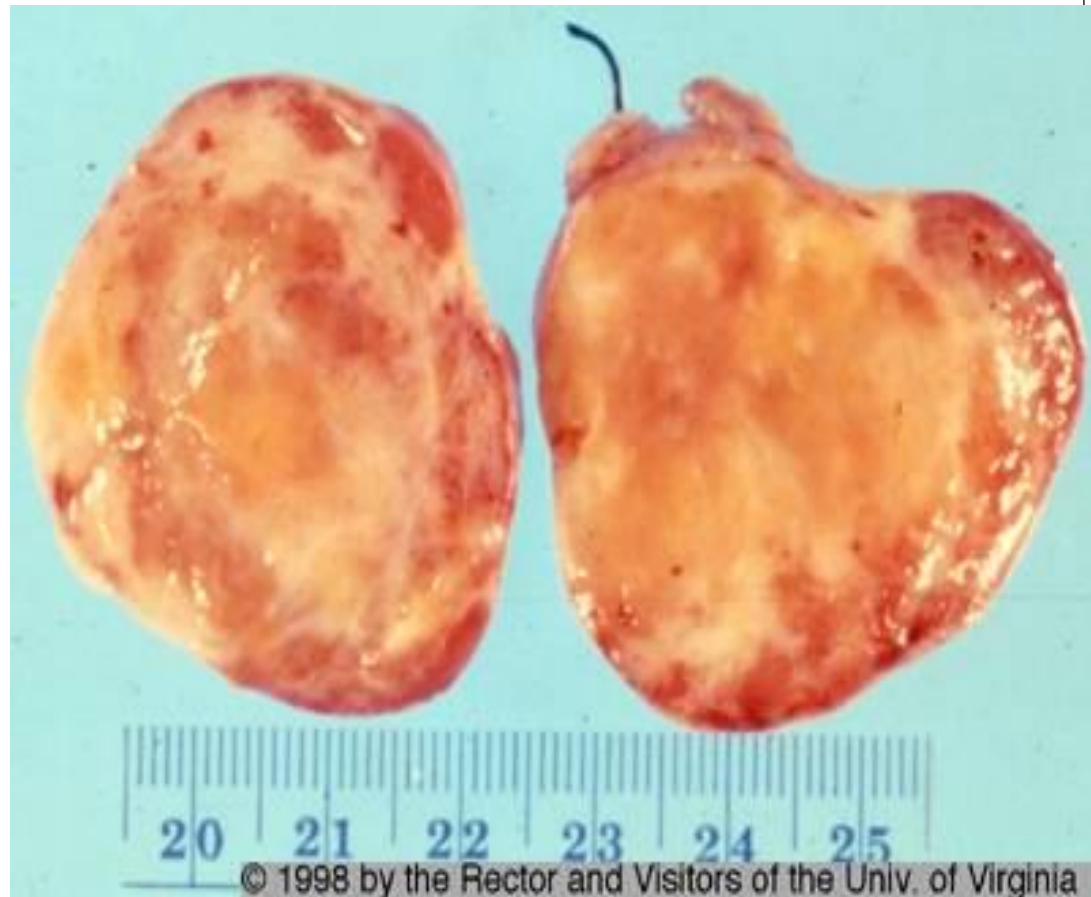


# Thecoma

- Functional tumors producing **estrogen**
- It occurs in postmenopausal women
- Endometrial hyperplasia or carcinoma may develop

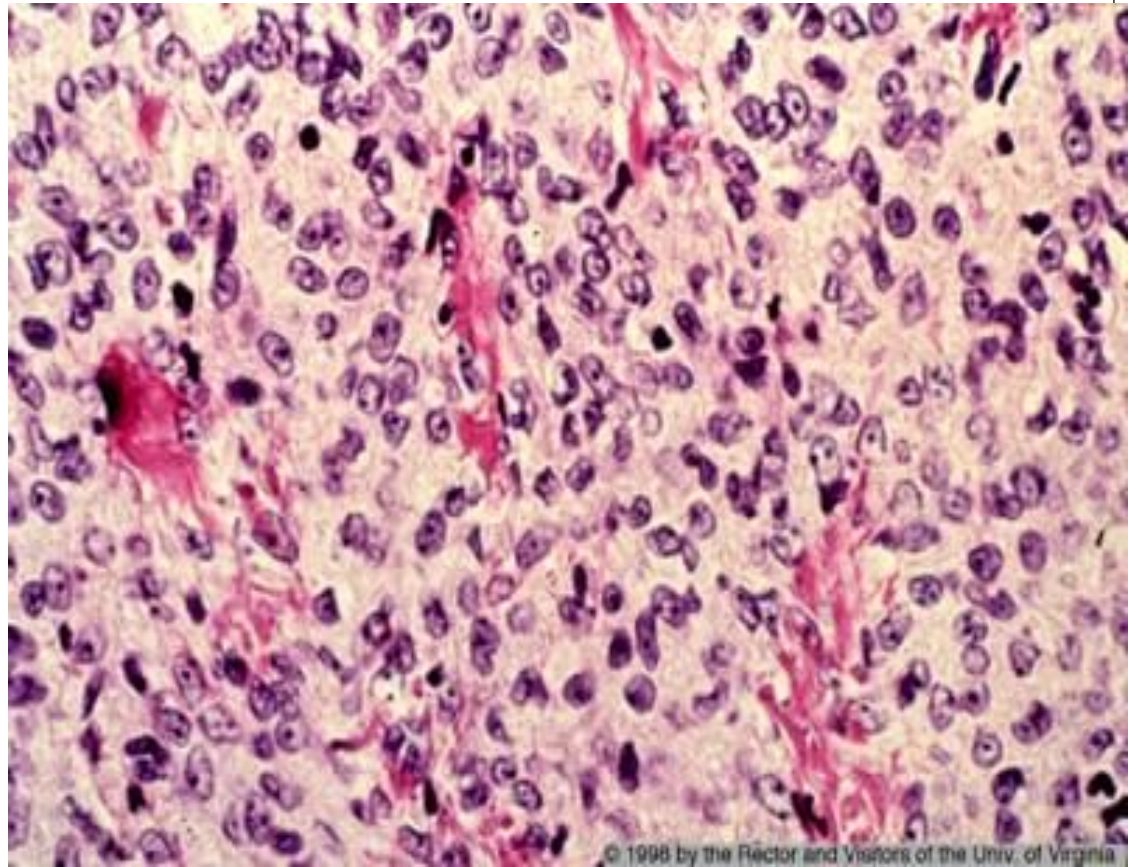
# Thecoma

- Solid tumor with yellow - orange appearance.



# Thecoma

- sheets of round to oval cells with pale cytoplasm containing lipid.



# Sertoli-Leydig cell tumors

- 1% of ovarian neoplasms
- 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

# Sertoli-Leydig cell tumors

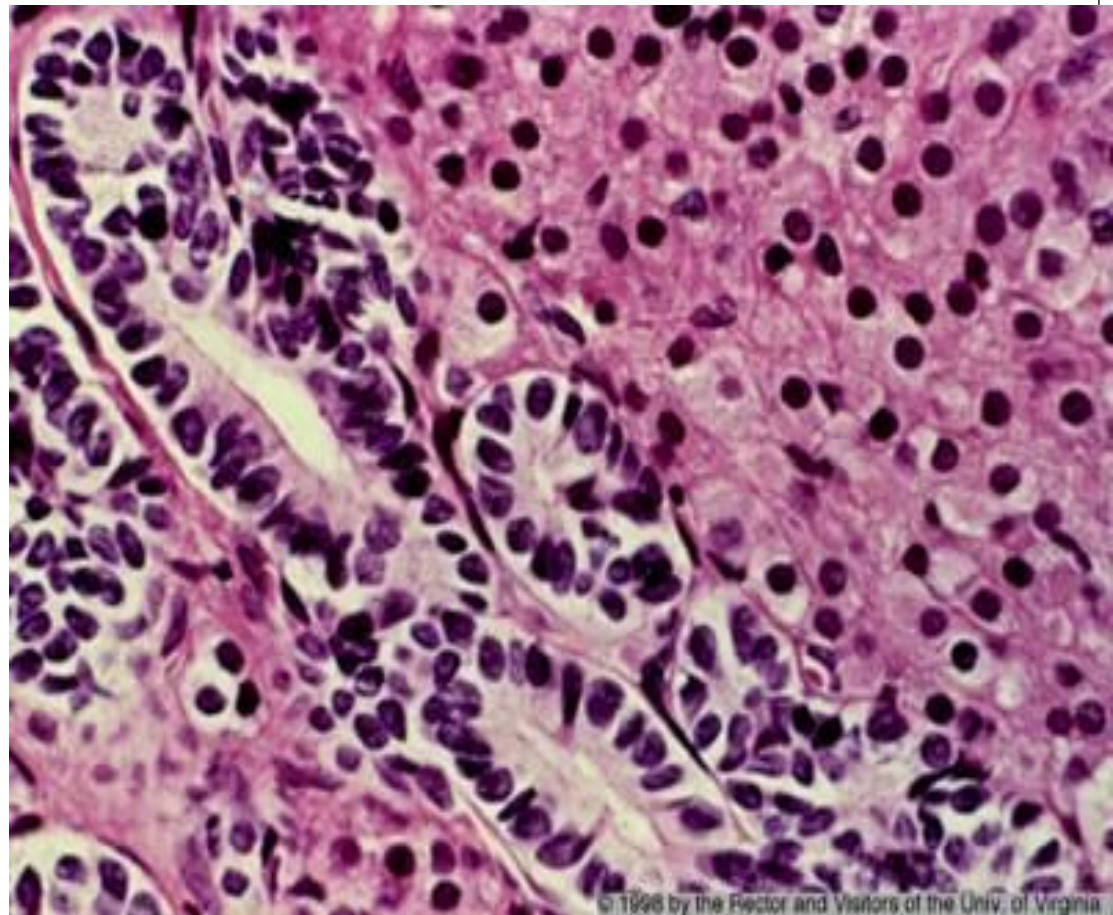
- solid & hemorrhage





# Sertoli-Leydig cell tumors

- Tubules lined by Sertoli cells and sheet of Leydig cells



# Metastases to ovary

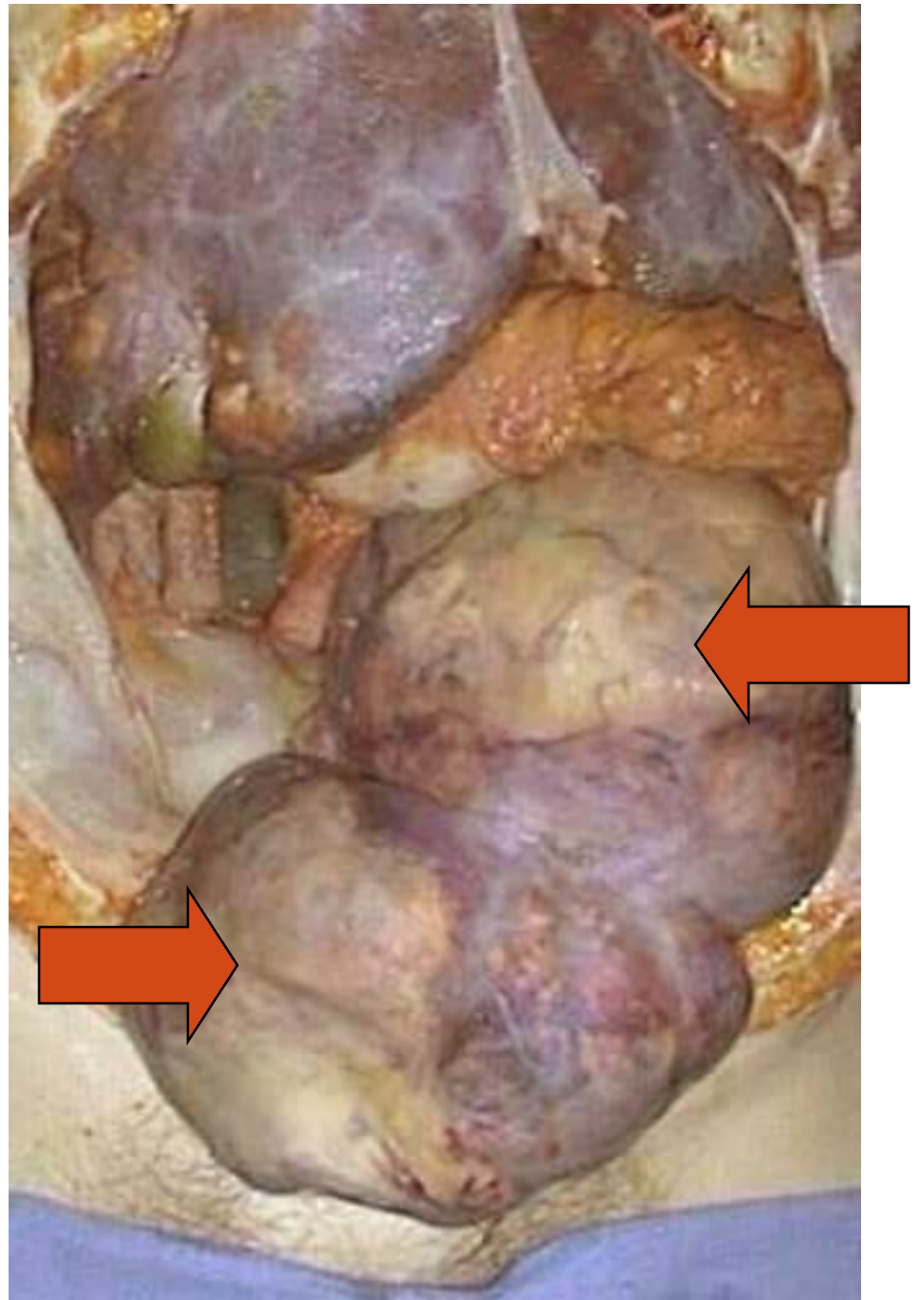
- About 3% of malignant tumors in the ovary are metastatic
- The most common primary site is the breast followed by the large intestine, stomach, and other genital tract organs.

# Krukenberg tumor

- It is applied to the uniform enlargement of the ovaries (usually bilaterally) due to diffuse infiltration of the ovarian stroma by **metastatic signet-ring cell carcinoma** .
- The commonest primary site is the stomach followed by the colon.

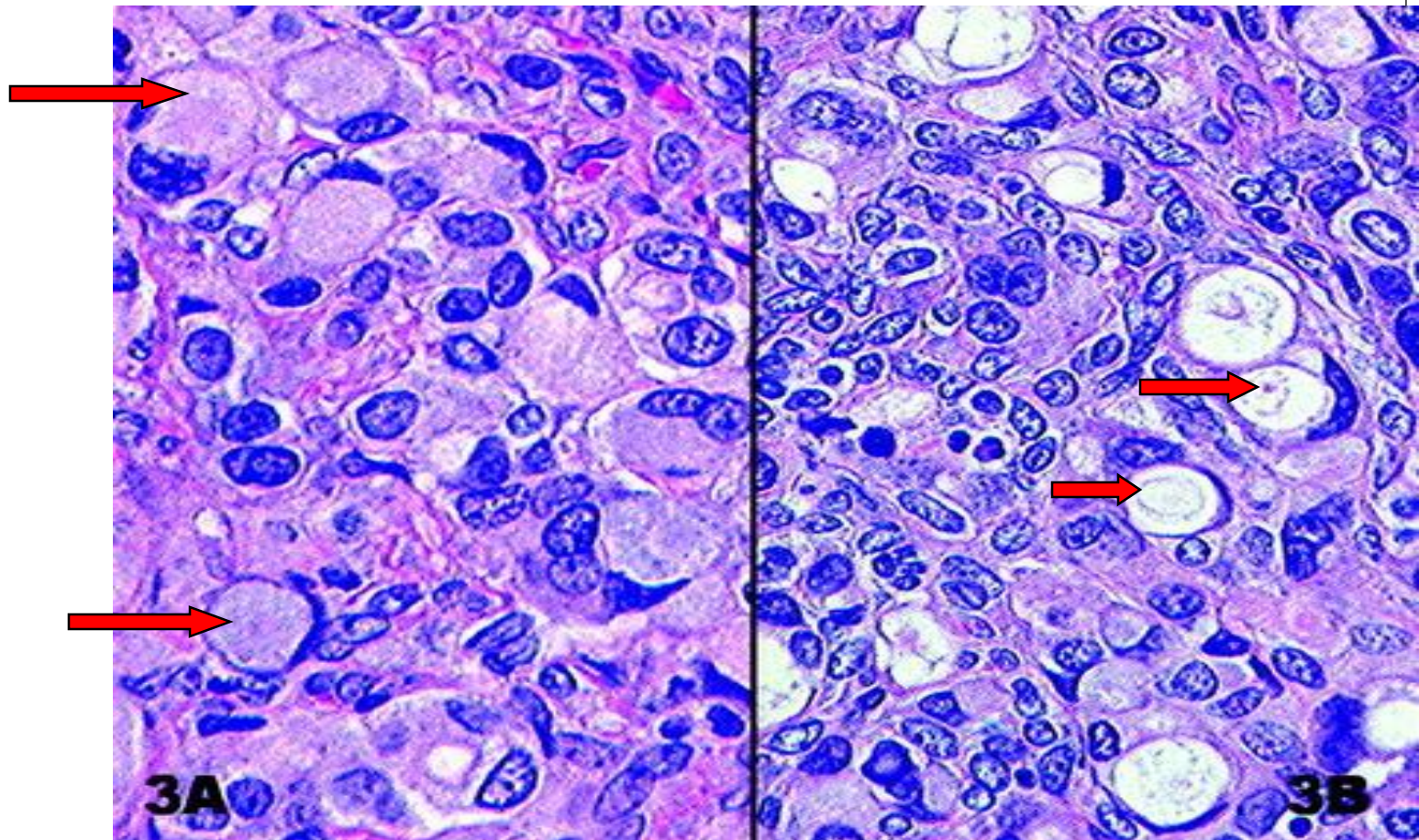


# Krukenberg Tumor



# Krukenberg Tumor

- Ovarian infiltration with signet ring cell



# Physical signs

- **Benign:**

- usually mobile.unless large or complicated

- **Malignant:**

- Bilateral
- Ascites
- Hard deposit in pelvis
- Leg edema
- Signs of bowel obstruction of ureteric obstruction

# Investigation

- Uss /CT scan
- Tumor markers( ca125,CEA, HCG,alpha FP
- Urea and electrolyte
- LFT
- Chest X ray
- Ascitic tap
- Calculate **RISK MALIGNANCY INDEX**

# RISK MALIGNANCY INDEX

- CA 125 estimation
- Menopausal status
  - pre menopausal score = 1
  - post menopausal score = 3
- Ultrasound score

Multi locular, solid areas, bilateral, ascitis, intra abdominal mets.

if 0 or 1 score = 1

if 2-5 score = 3

$$\text{RMI} = \text{CA125} \times \text{M} \times \text{U}$$



# FIGO Staging

Stage 1	Growth limited to one or both ovaries
Stage 2	Growth limited to one or both ovaries with pelvic extension
Stage 3	Tumor involving one/both ovaries with peritoneal implants outside pelvis/positive retroperitoneal or inguinal nodes
Stage 4	Growth involving one or both ovaries with distant metastasis

# MANAGEMENT

- Surgery :
  - primary
  - interval debulking
  - palliative
  - second look surgery
- Chemotherapy

# Primary surgery

- Primary cytoreduction
- TAH,BSO,OMETECTOMY,WASHINGS

## BOWEL SURGERY

- Optimal debulking: less than 2 cm residual tumors
- Staging once histology is available
- If confined to ovary and young age... conservative surgery

# Interval debulking

- Alternative to primary surgery
  - medically unfit
  - large ascitis
  - severe malnutrition
- 3 cycles of chemotherapy –surgery – 3 more cycles of chemotherapy
- Aim :    to improve patient condition
  - less extensive surgery to achieve optimal debulking
- May improve survival

# Chemotherapy

- Indication —
- stage 1c and above
- Platinum based
- Taxol
- 6 cycles at 3 weekly intervals
- Monitoring:
  - examination
  - CA125
  - FBC, U&E



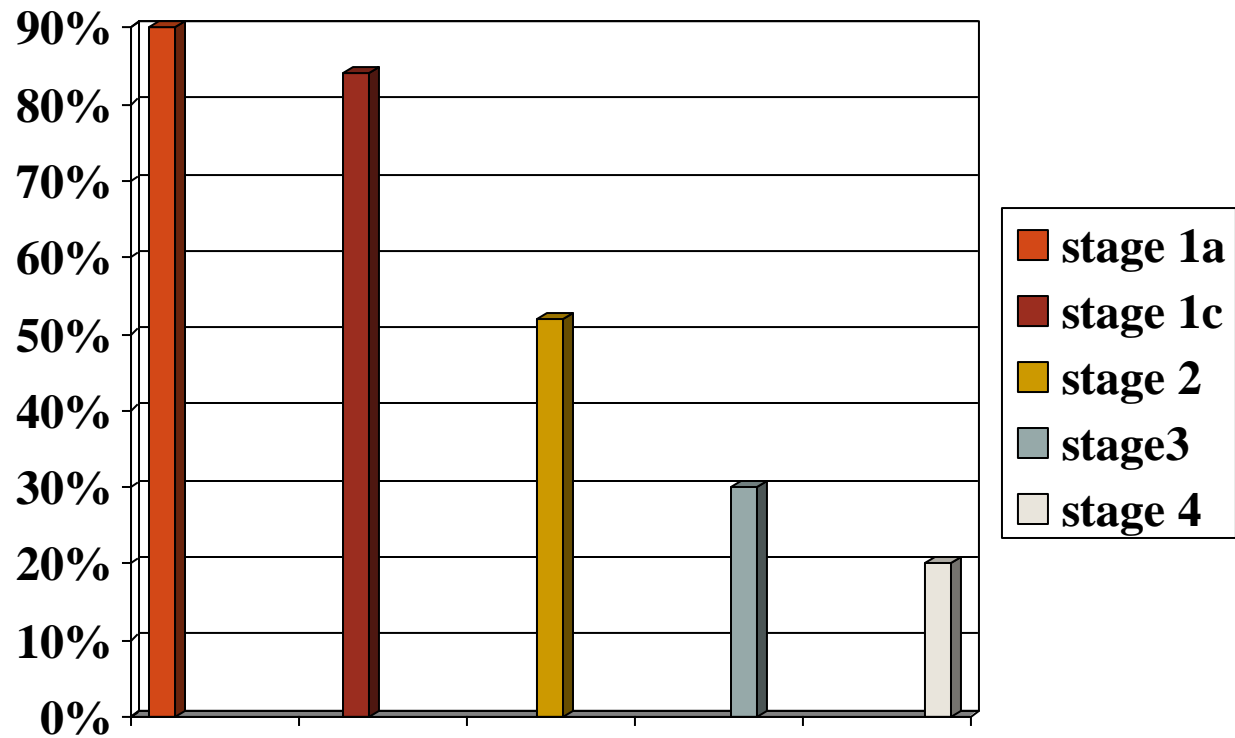
# SECOND LOOK SURGERY

- Assess response to chemotherapy
- Plan future management
- Only in research context.

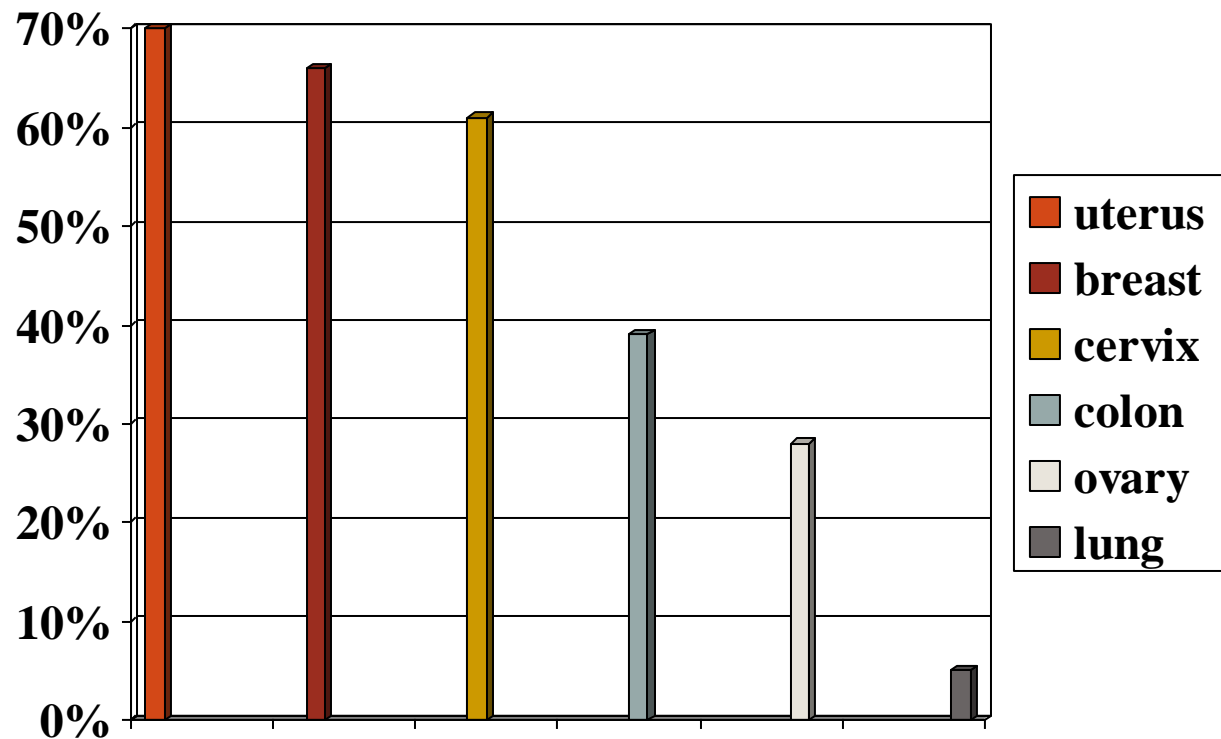
# Palliative surgery

- Removal of intestinal obstruction
- Survival is very poor
- Quality of life considerations

# Five year survival



# Five year survival



Five year survival rates in England and Wales  
1986-1990

# Follow up

- How aggressive?.
- Three monthly for one year then six monthly then yearly
- History, examination and CA125
- Imaging if recurrence is suspected clinically or by CA125



# Ovarian cancer screening

- Life time risk is 1%
- 5% of tumors are genetic
- History of breast cancer increases risk by factor of 2
- History of ca ovary increases the risk by factor of 3
- One first degree relative affected: risk 2.7%
- 2 first degree relatives affected : risk is 13%
- If BRCA1 mutation carrier : risk is 50%

# screening

- Problems :
  - no pre-cancerous stage
  - unknown natural course
- TVS AND CA125 ON YEARLY BASIS
- ONGOING STUDY TO EVALUATE THIS.

GOOD LUCK