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

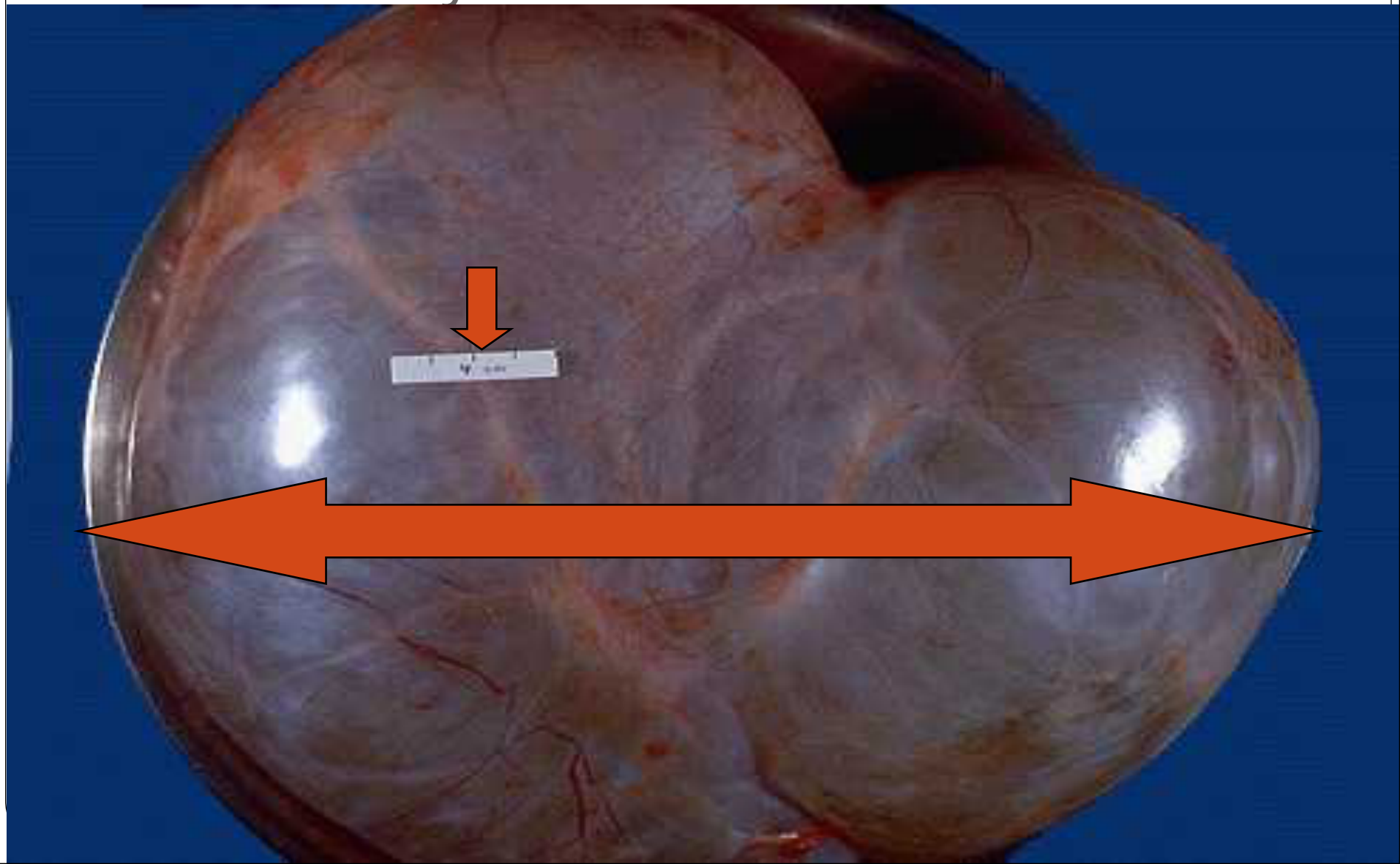
- **Borderline**
- gross; cystic / solid foci
- microscopic; papillary complexity, stratification, nuclear atypia, no stromal invasion
- **Malignant** ; -
- gross; mostly solid & hemorrhage / necrosis

- microscopic; papillary complexity, stratification, nuclear atypia, stromal invasion

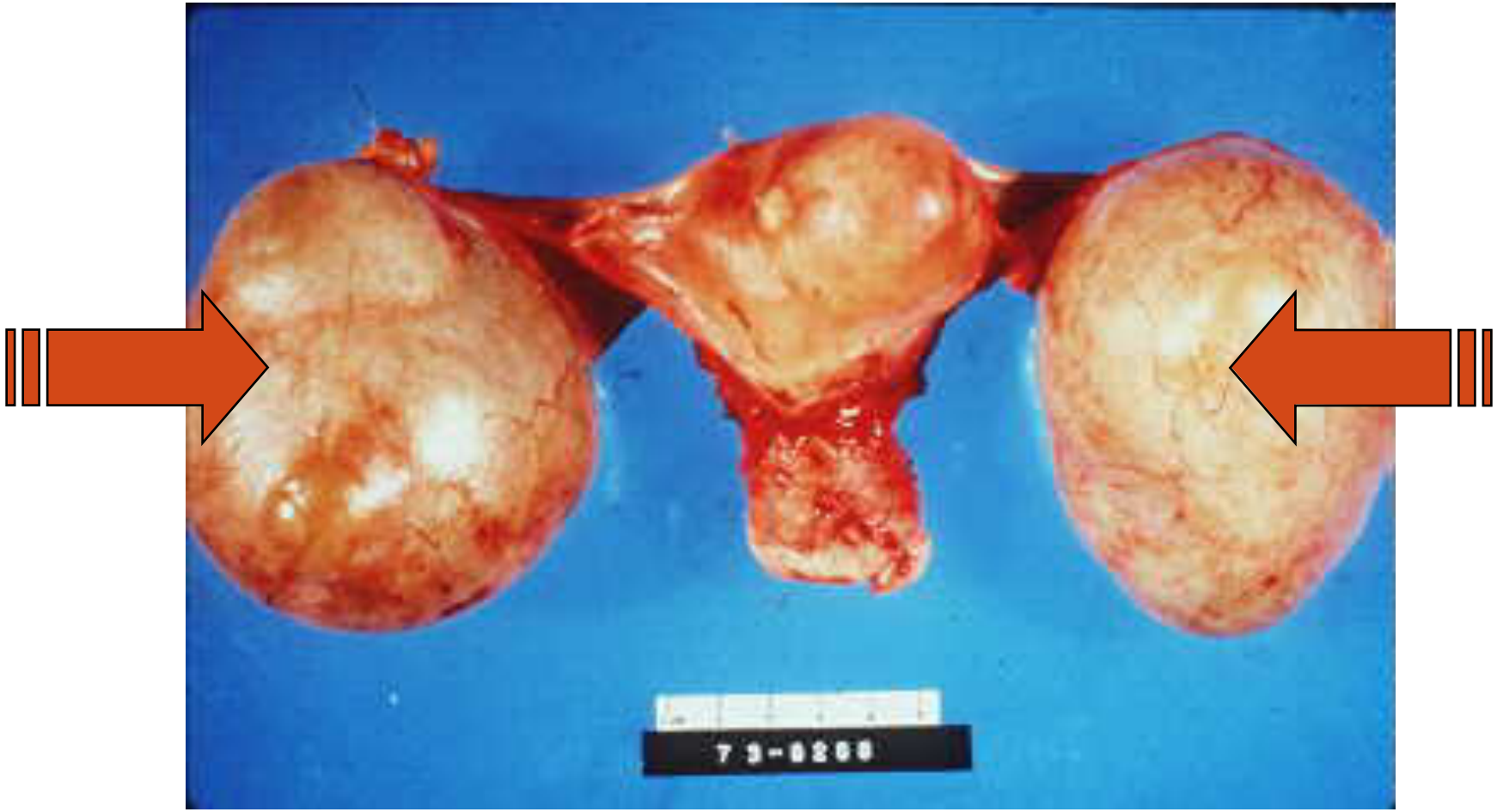
Serous Tumors:

- 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.

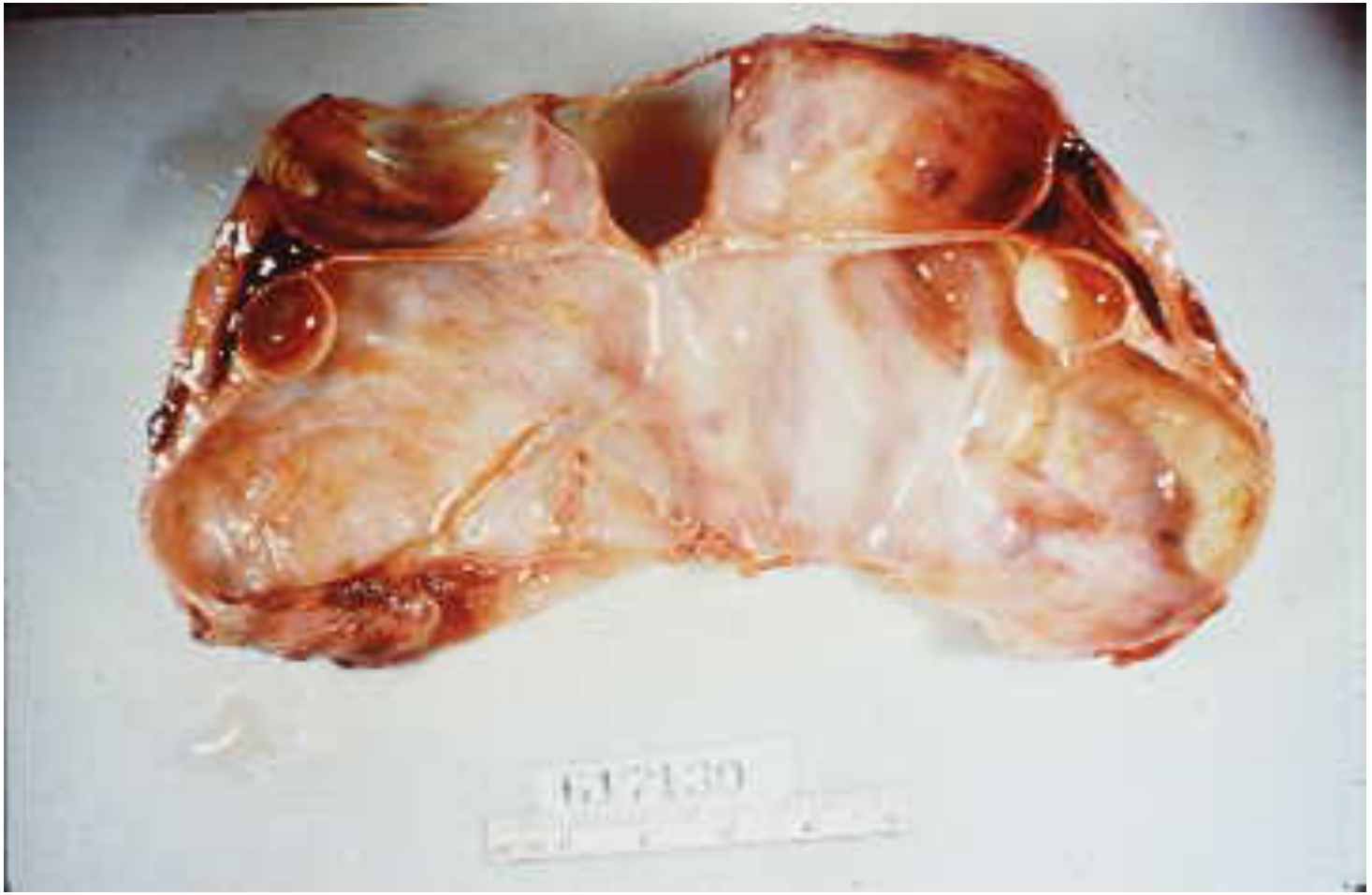
Serous Cystadenoma



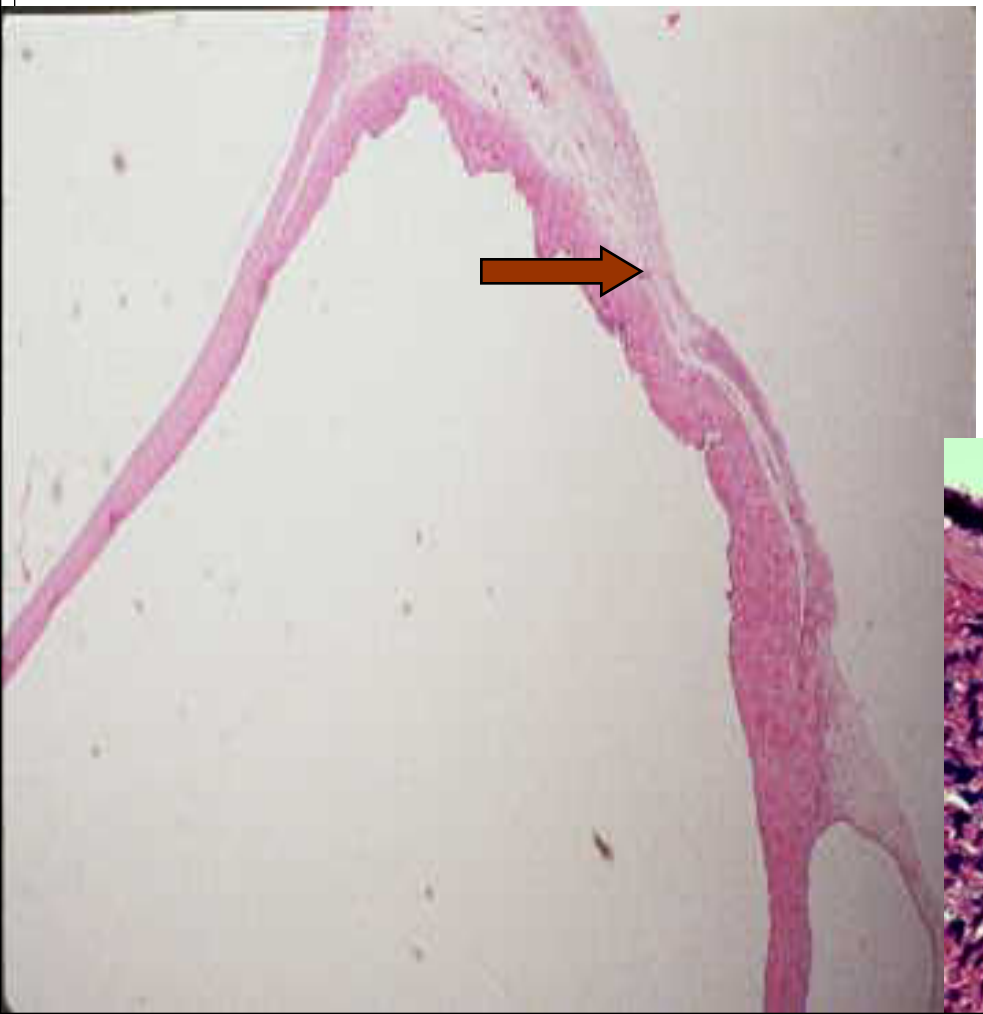
Bilateral cystadenoma



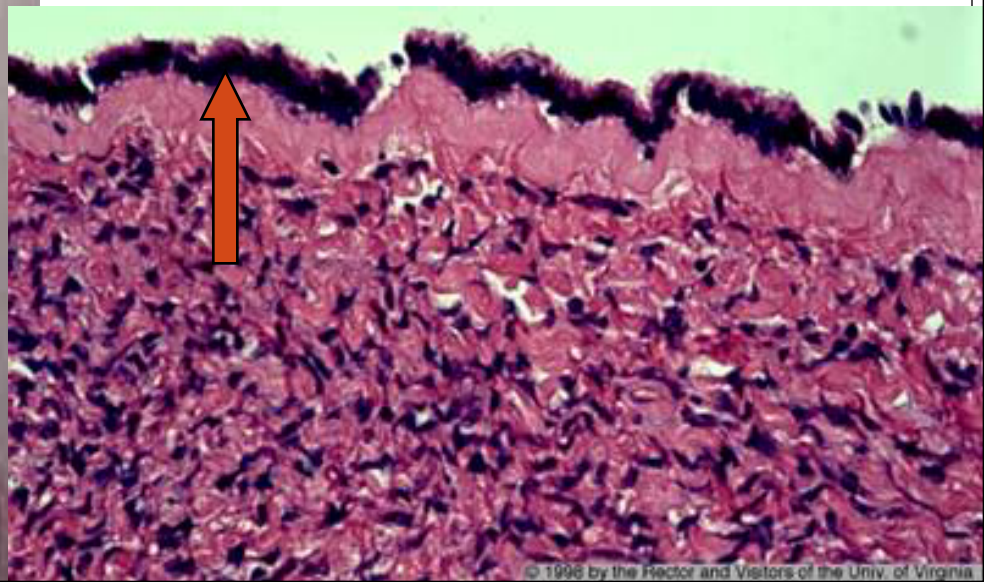
Serous Cystadenoma:



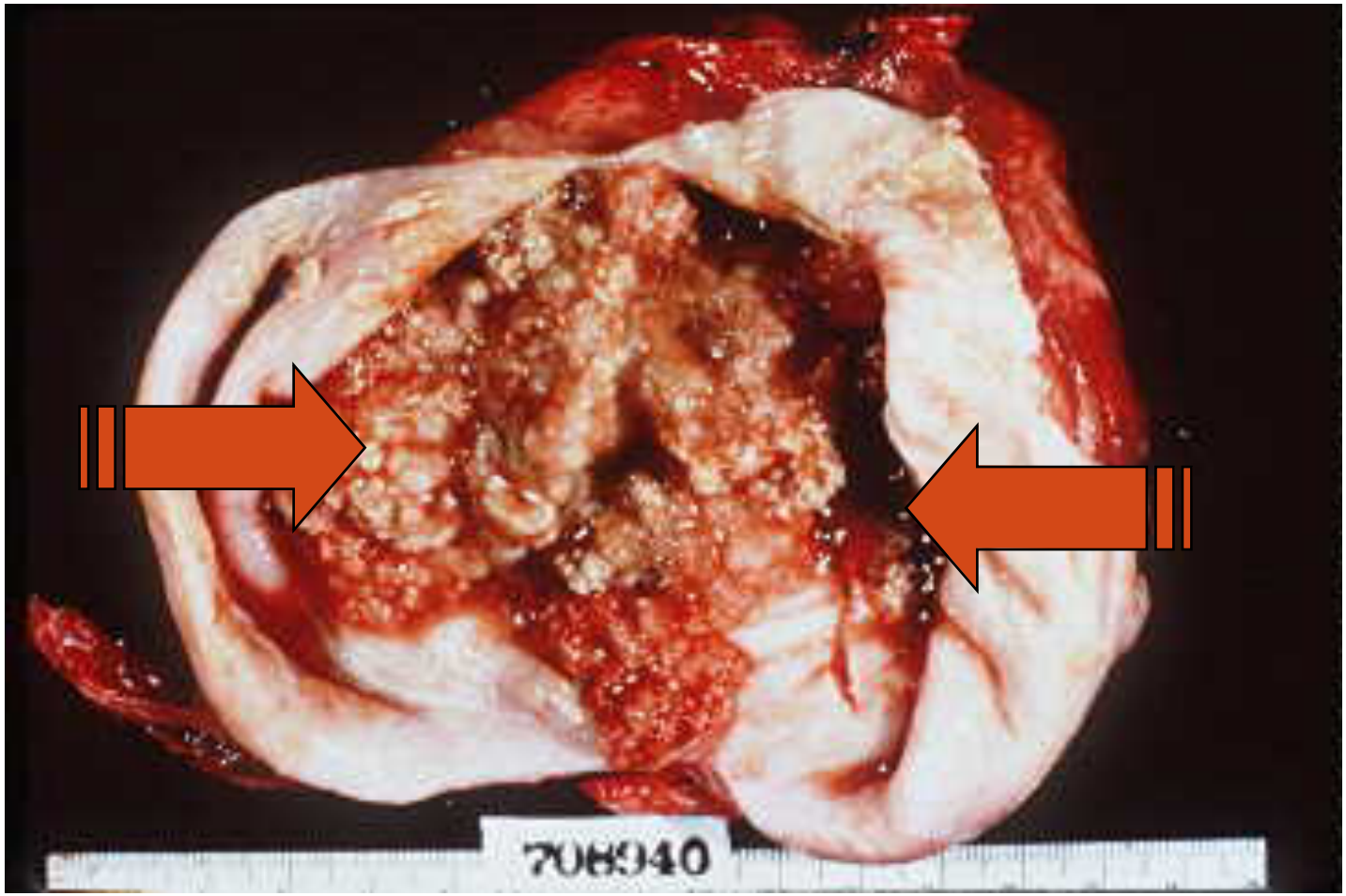
Serous Cystadenoma



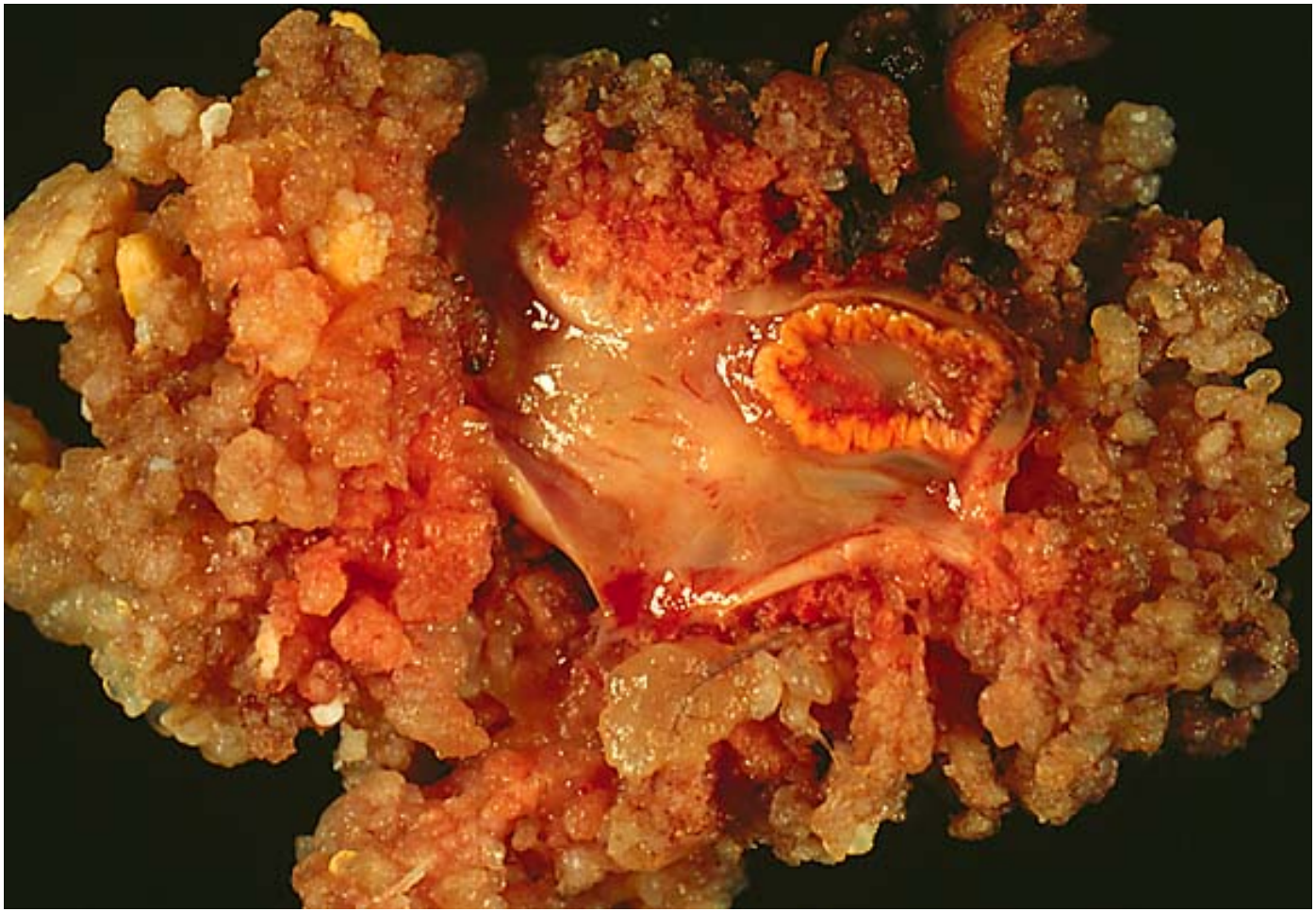
- single layer of columnar ciliated
- Fine papillae



Papillary serous cystadenoma (solid/cystic)-borderline

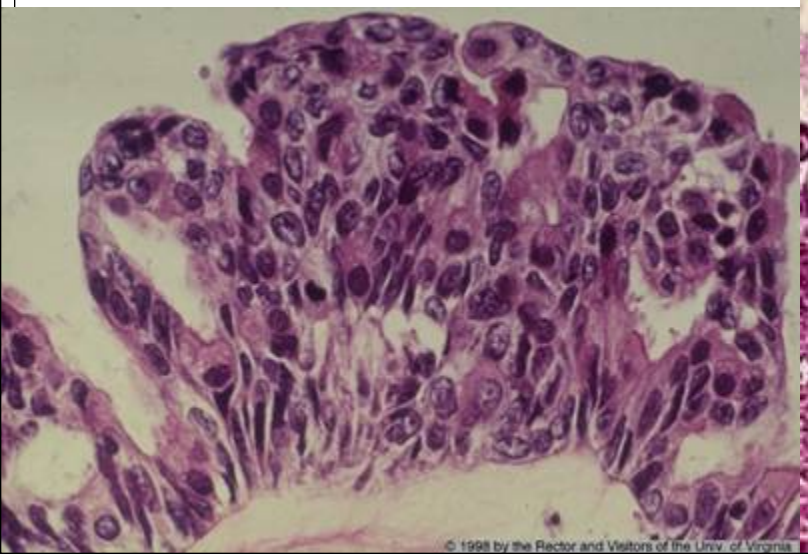


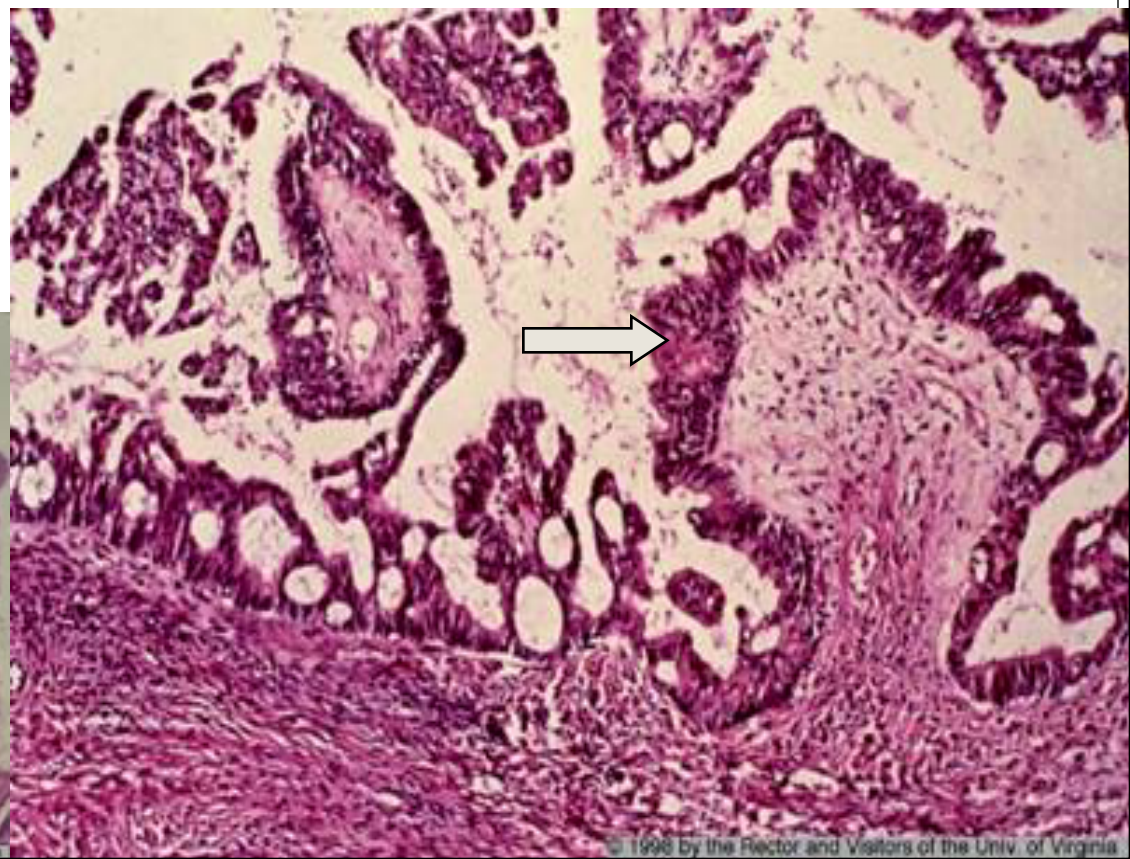
Papillary cystadenoma (bor)



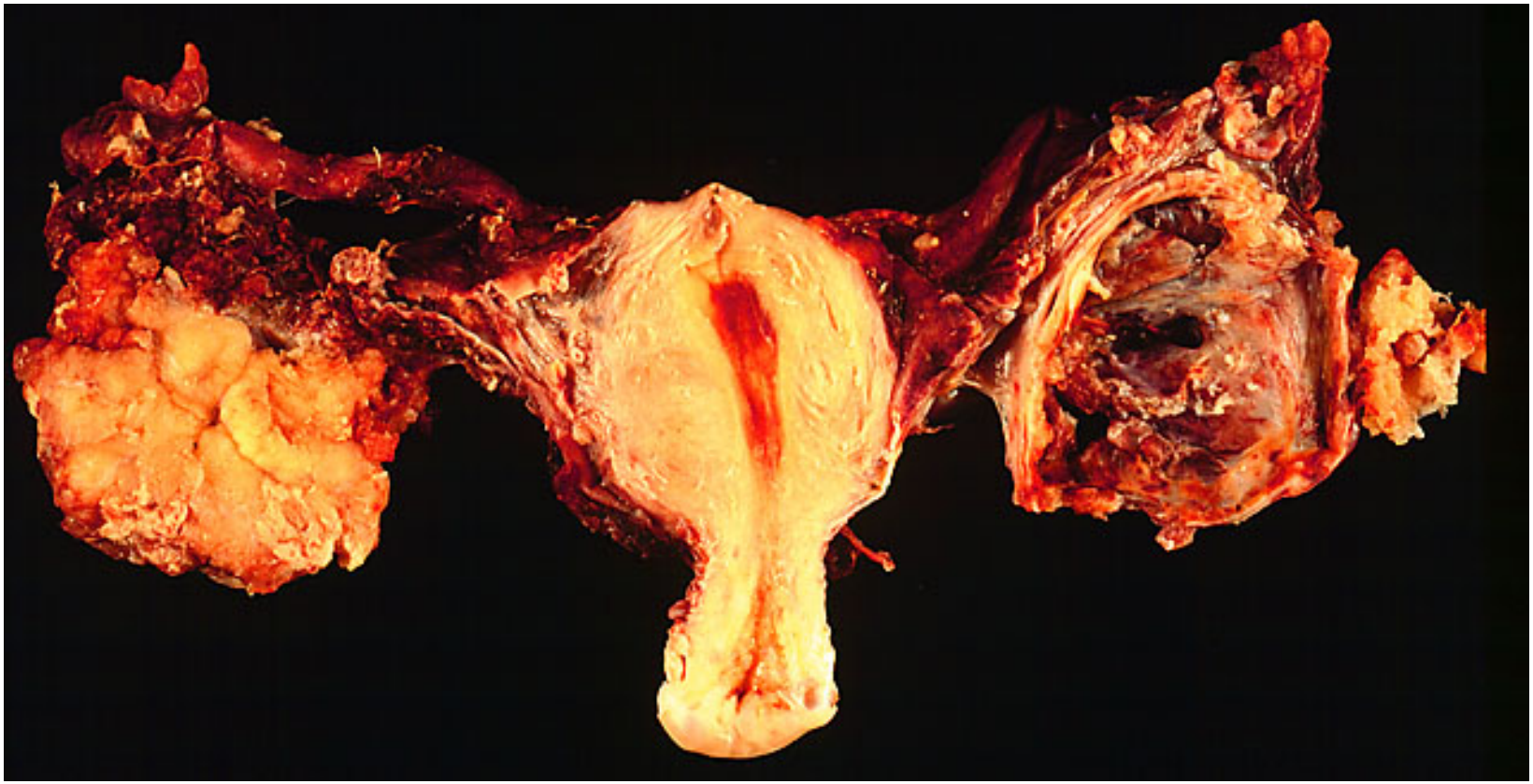
Papillary cystadenoma (bor)

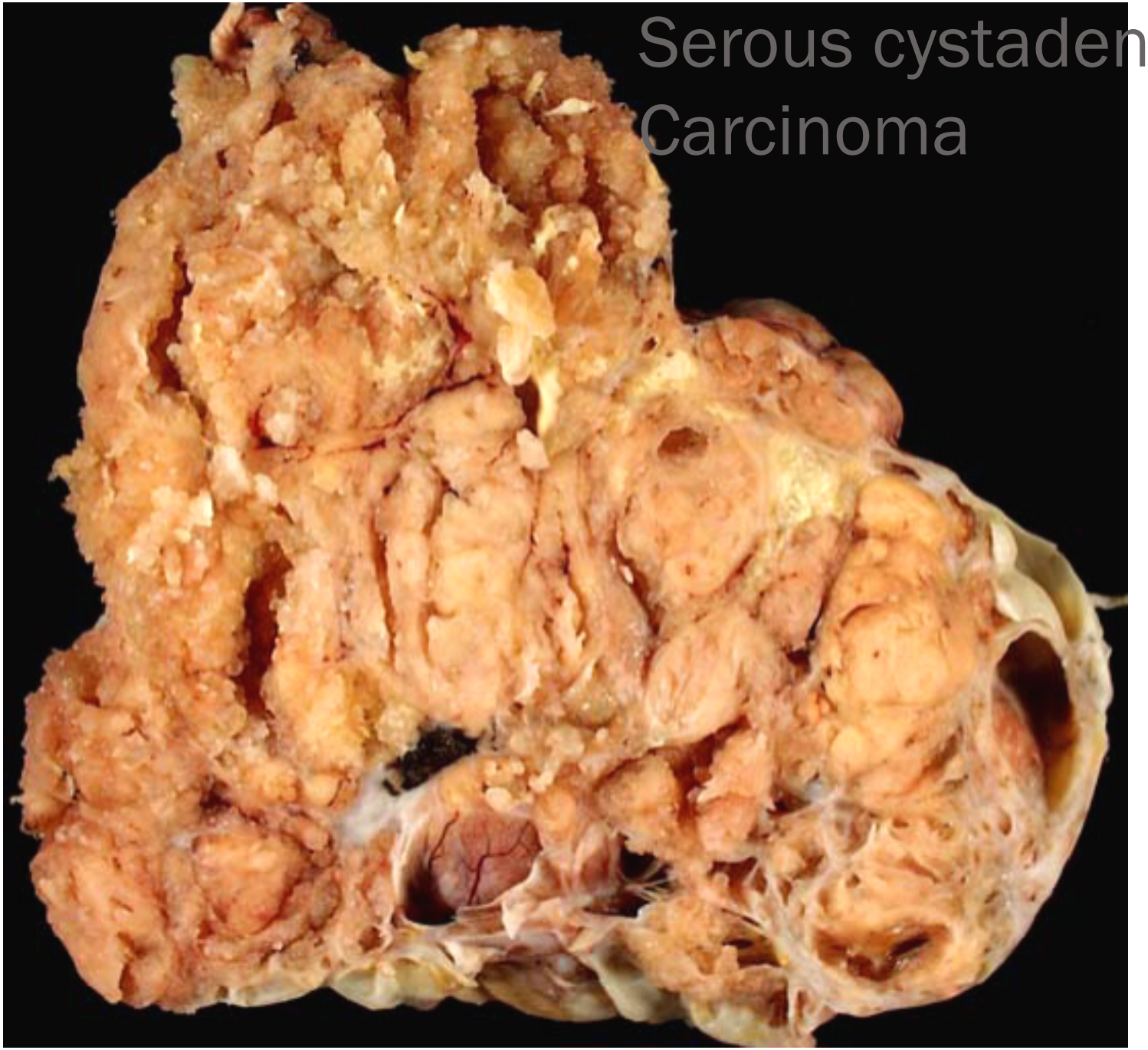
- Papillary complexity
- Nuclear stratification& atypia
- No stromal invasion





Serous cystadeno Ca – bilateral

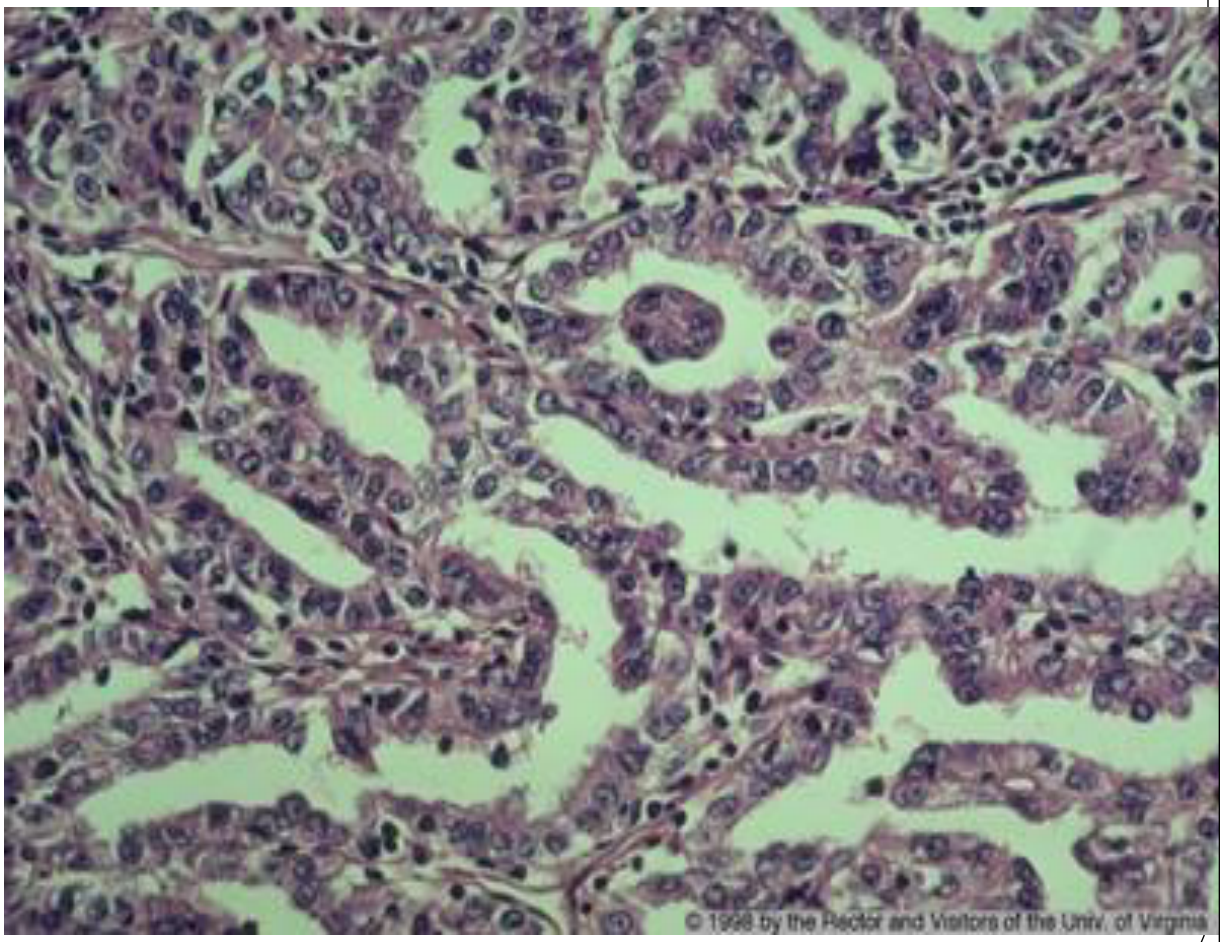




Serous cystadeno
Carcinoma

Serous cystadenocarcinoma

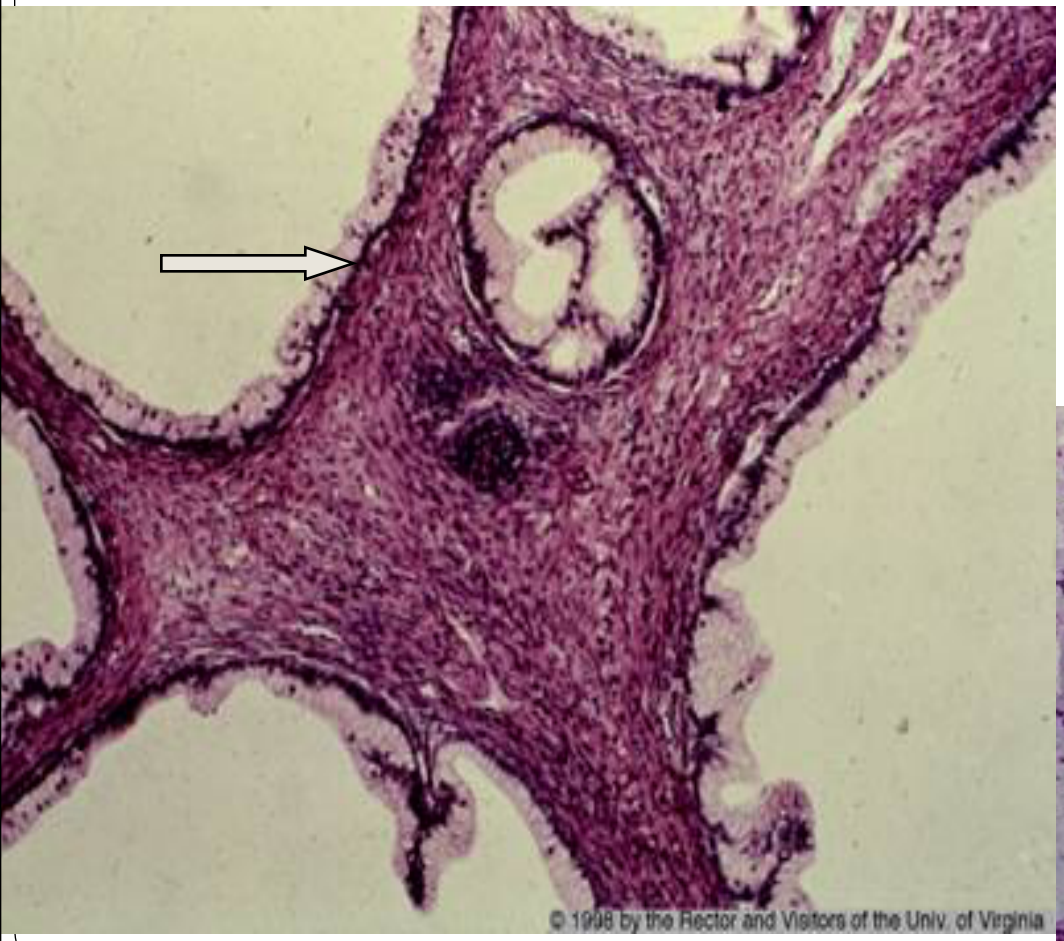
- Papillary complexity
- Nuclear stratification& atypia
- stromal invasion
- Psammoma bodies



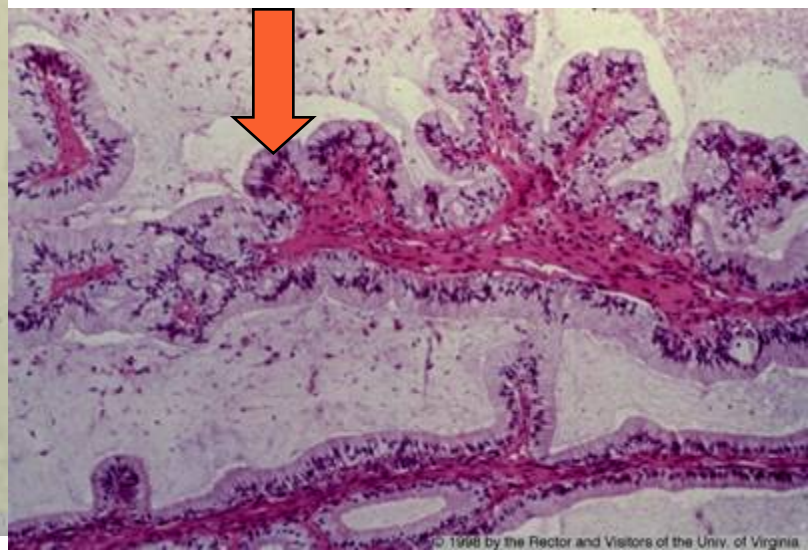
Mucinous Tumors:

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

Mucinous cystadenoma

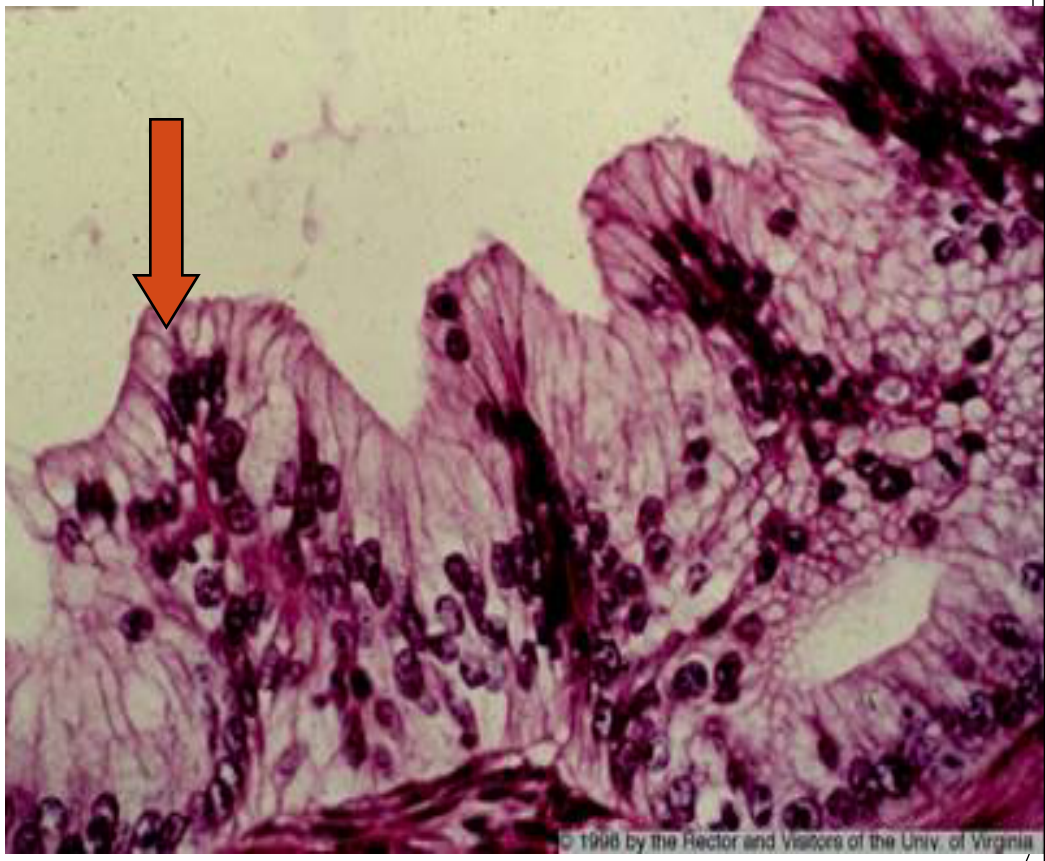


•Multilocular cyst lined by single layer of columnar cells with basally placed nuclei and apical mucin.



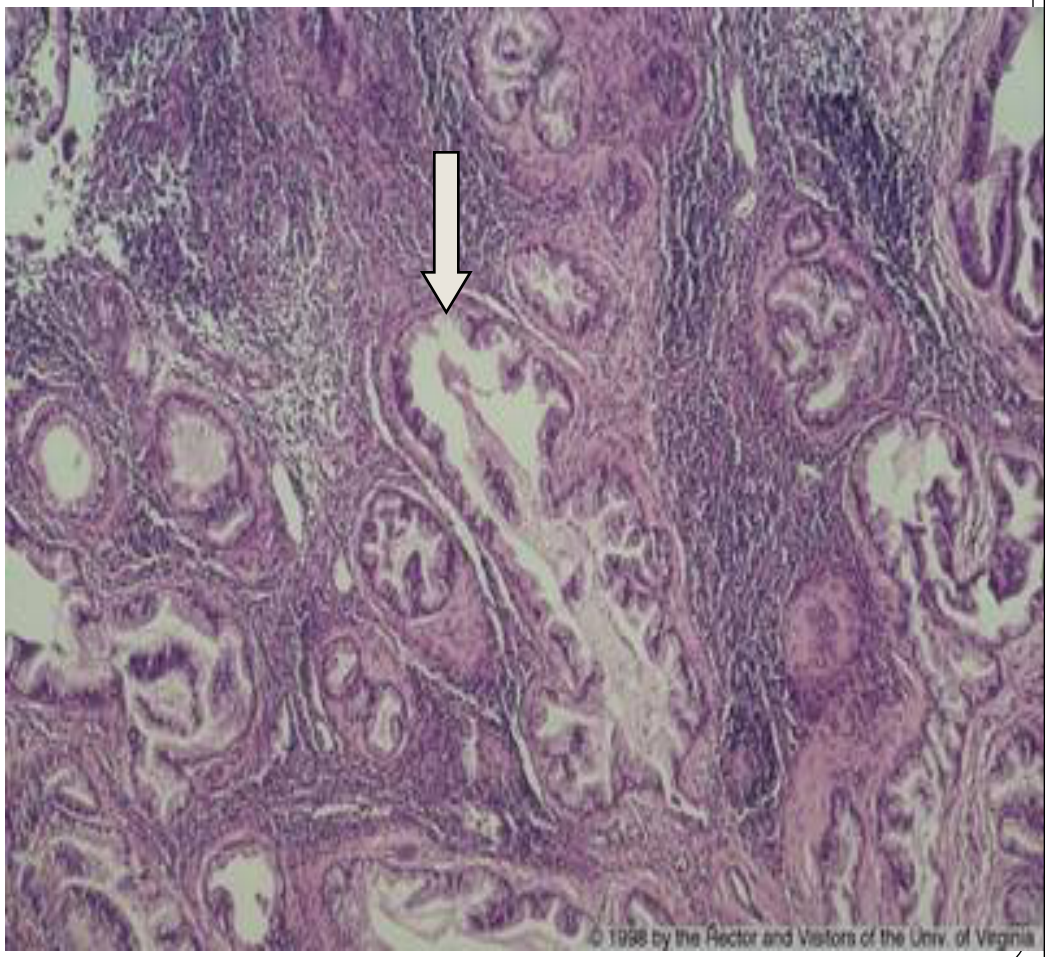
Mucinous cystadenoma-borderline

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



Mucinous cystadenocarcinoma

- Papillary complexity
- Nuclear stratification& atypia
- stromal invasion

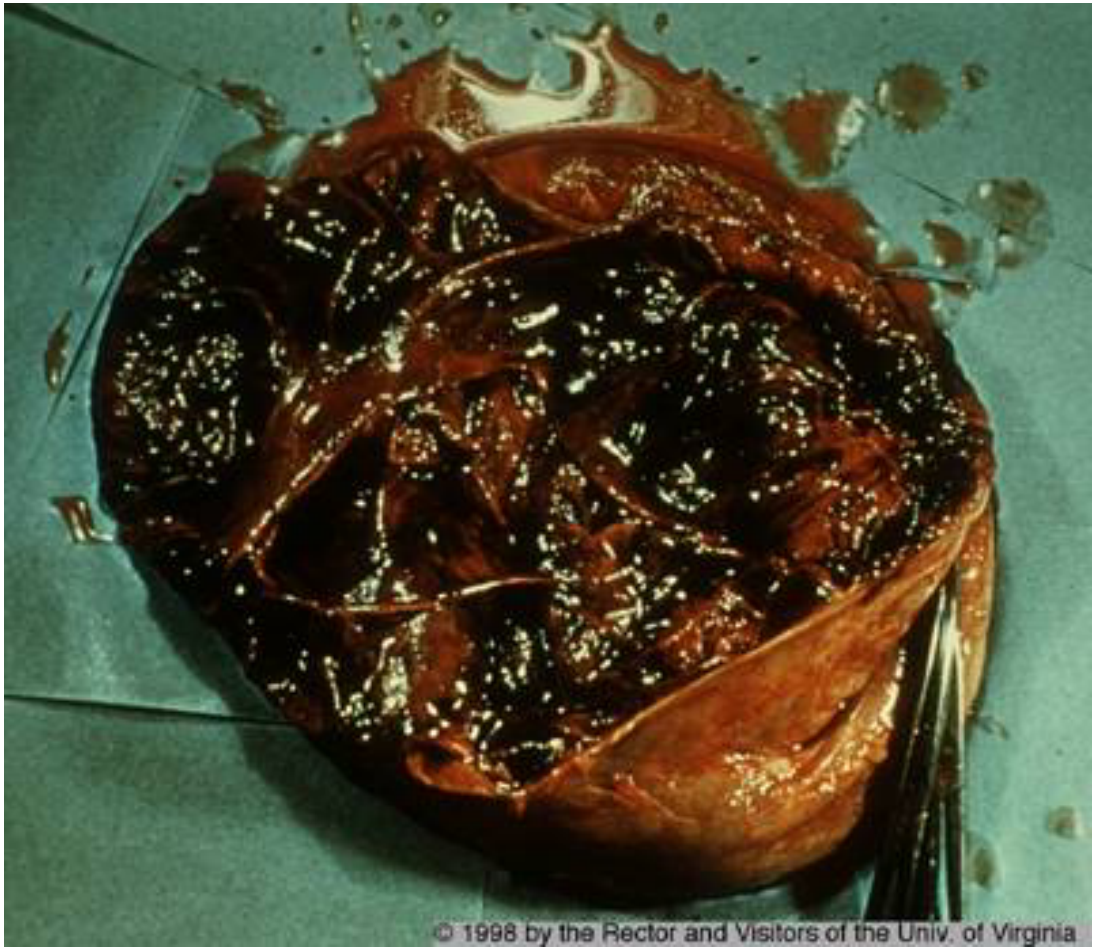


Endometrioid tumors

- 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

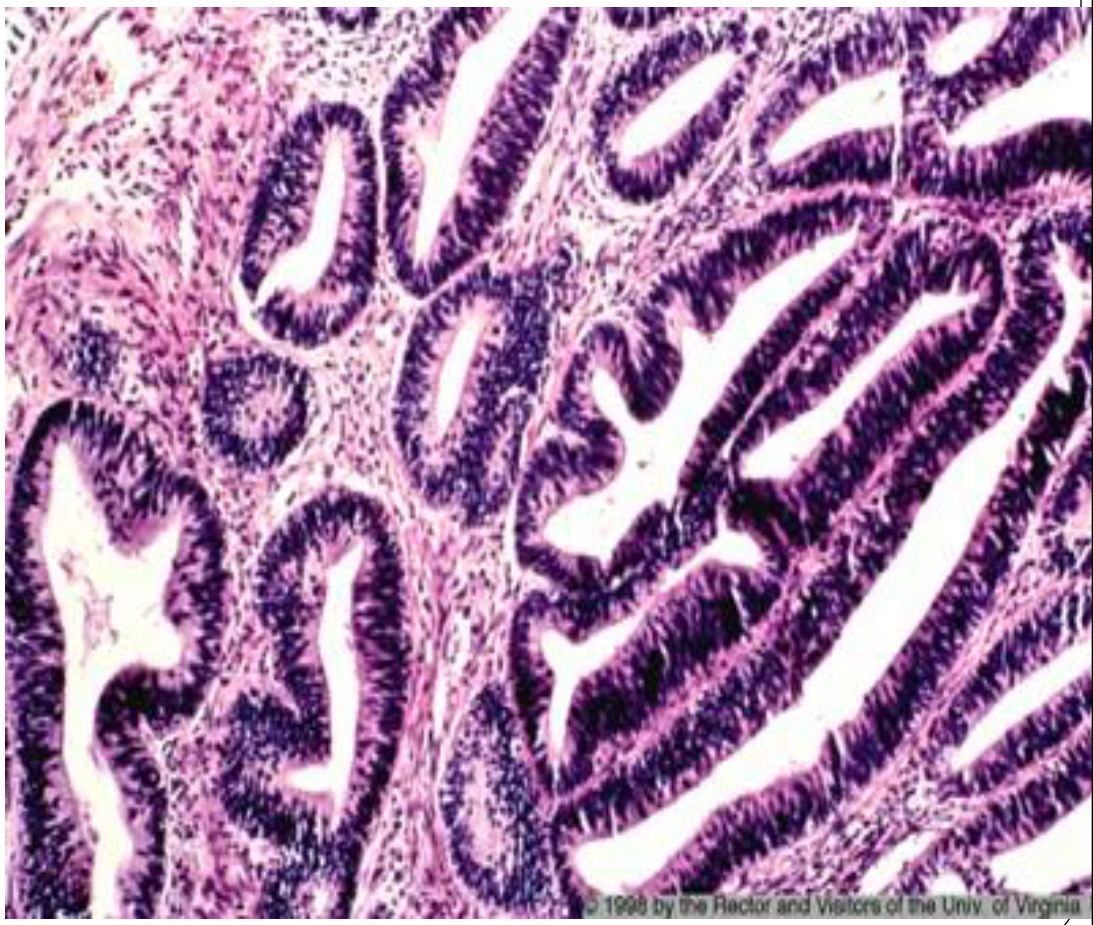
Endometrioid tumors

Solid / cyst filled by hemorrhage & necrosis



Endometrioid adenocarcinoma

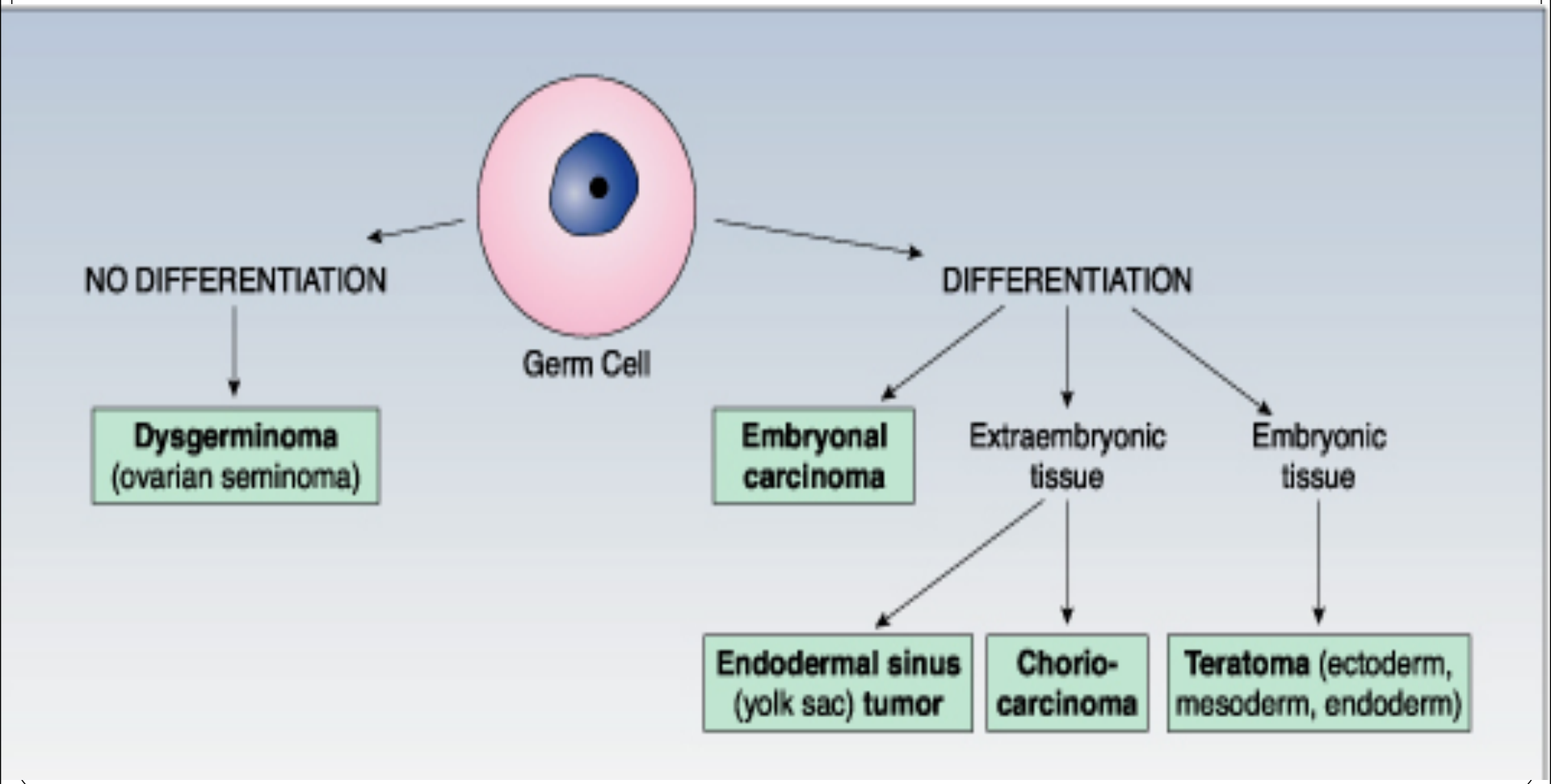
• stromal invasion by irregular malignant endometrial glands



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



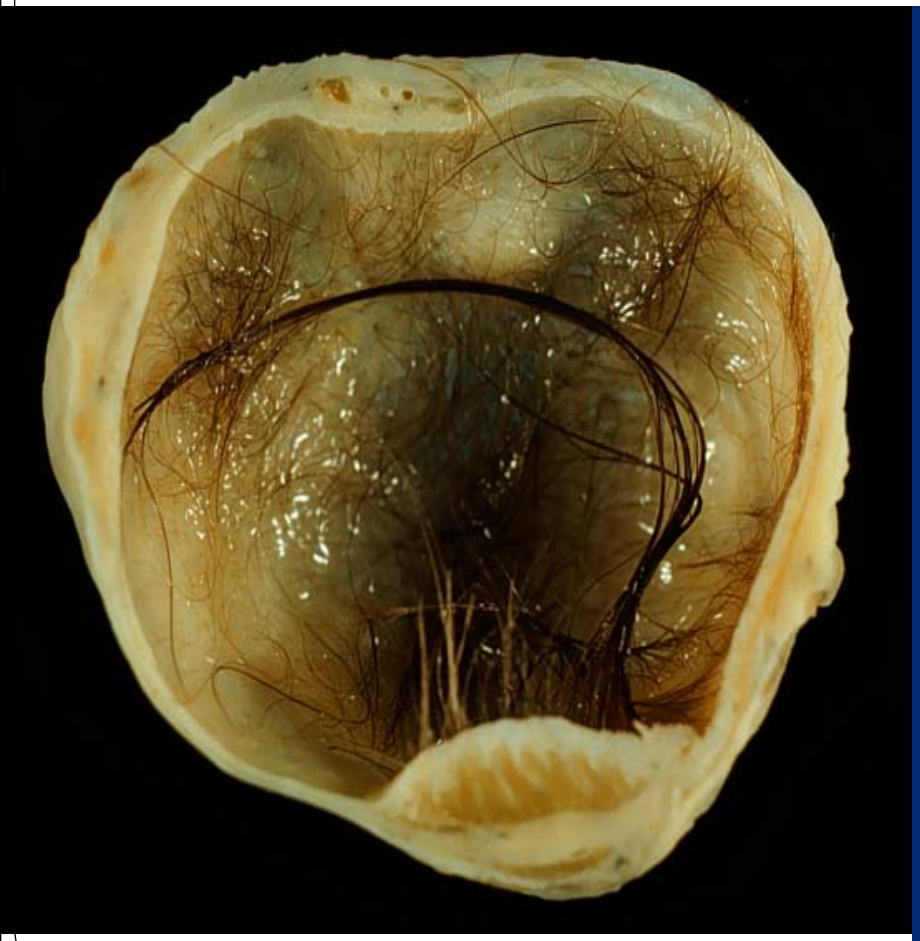
Germ cell Tumors

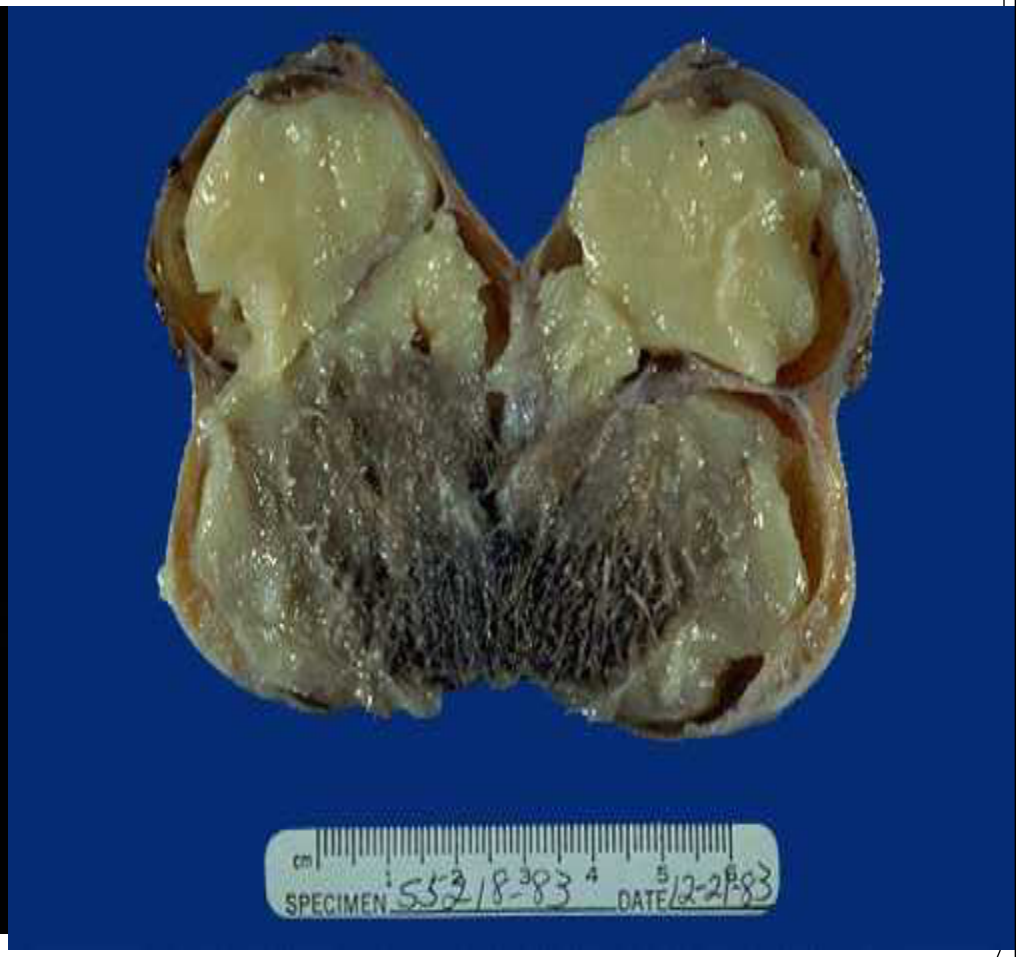
- Teratoma
  - Benign cystic (dermoid cysts)
  - Solid immature
  - Monodermal – struma ovarii, carcinoid
- Dysgerminoma
- Yolk sac tumor (Endodermal sinus tumor)
- Choricarcinoma
- Mixed germ cell tumor

Dermoid (Benign cystic terratoma)

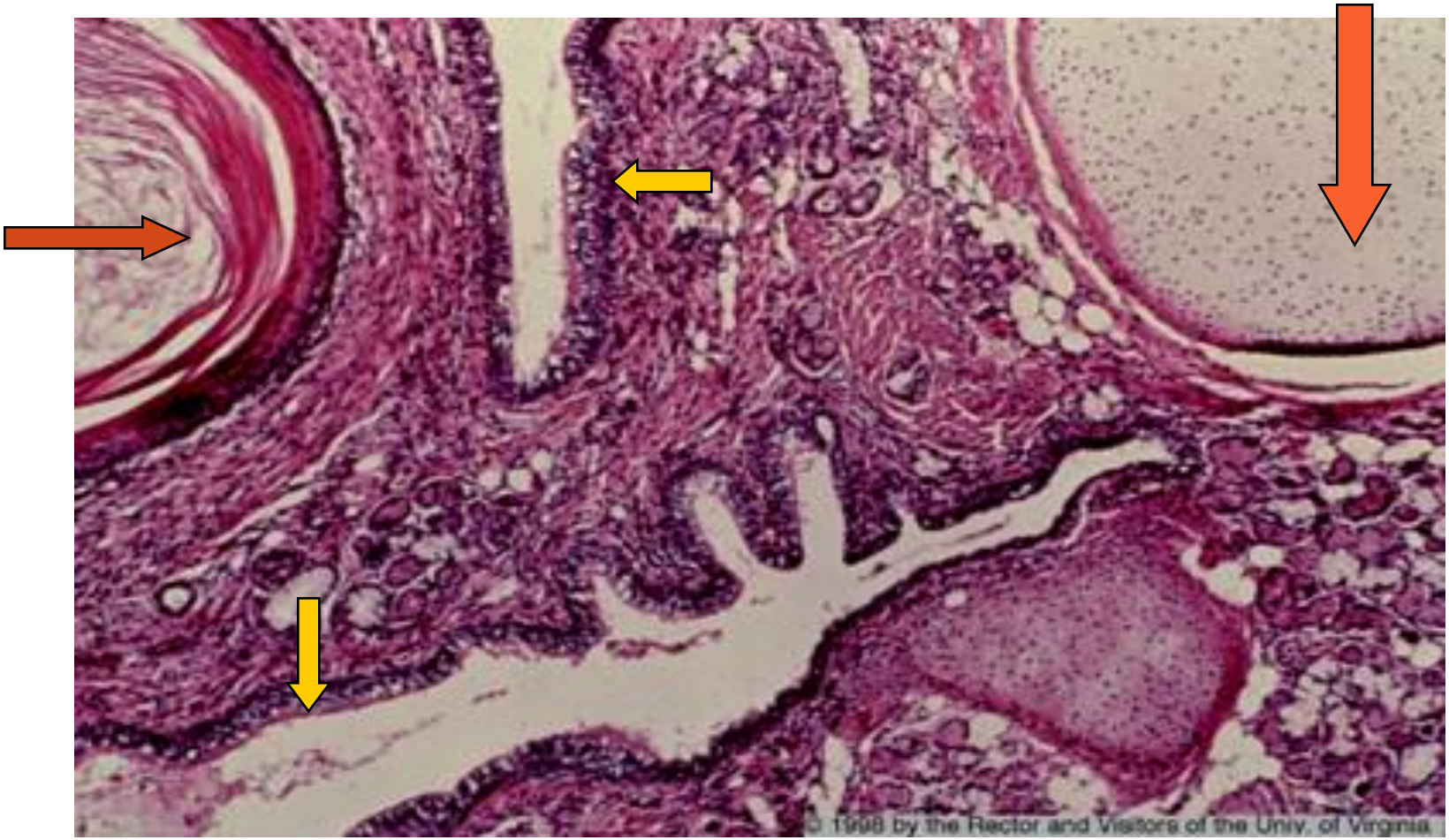
- Ectoderm + Mesoderm + Endoderm
- Supradiaphramatic structures
- Teeth permanent never deciduous
- Teeth canines,molars,incisors
  but never premolars
- No Gonadal tissue
- But assoc. with Granulosa
  Theca
  Androblastoma

Cystic Teratoma (Dermoid Cyst)





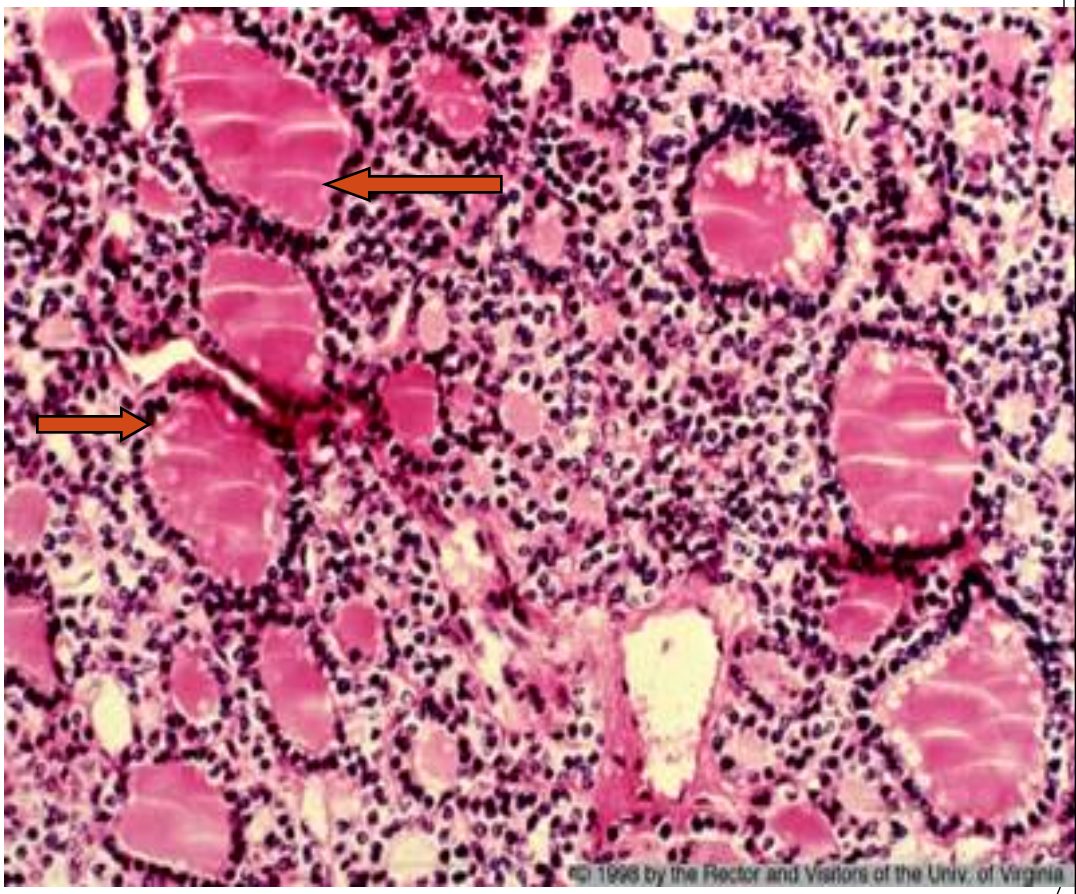
Dermoid Cyst



Monodermal teratomas

- **Struma ovarii:**

composed entirely of mature thyroid tissue

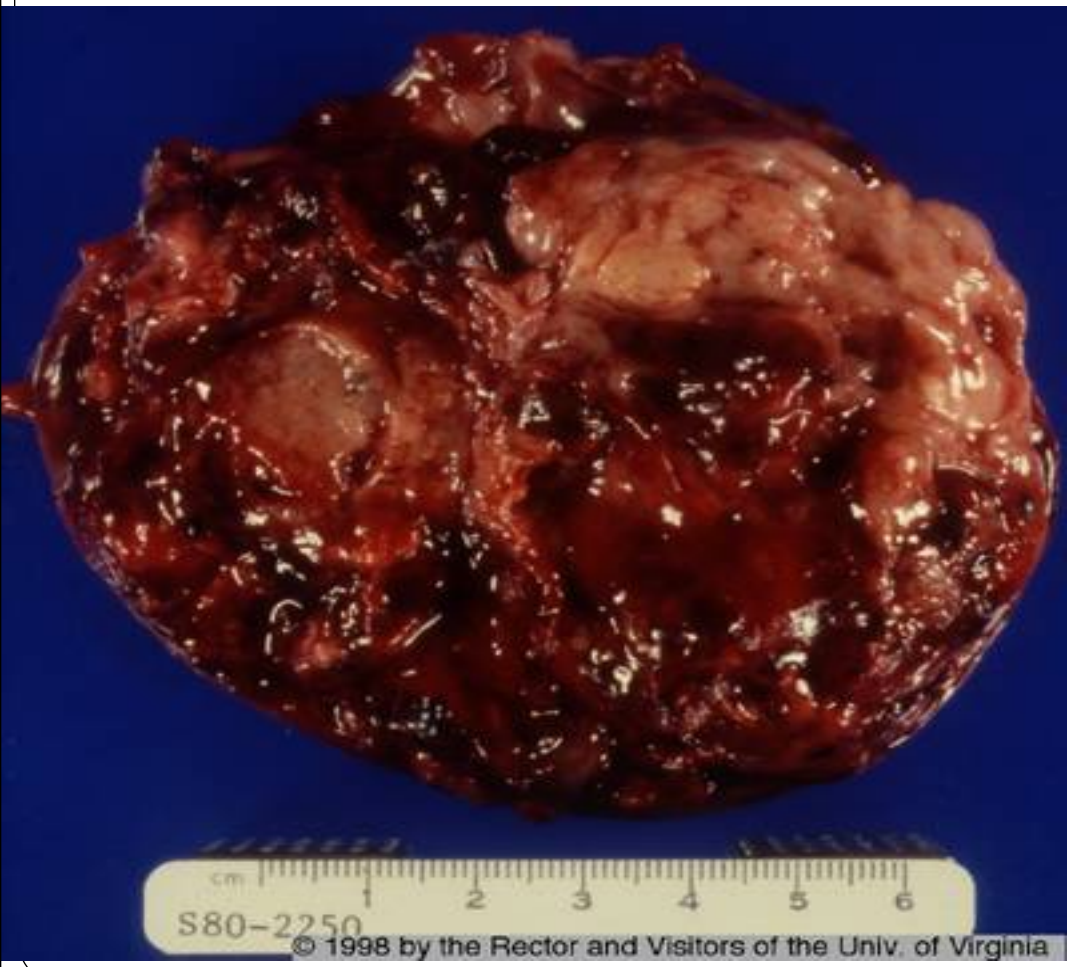


Dermoid (Benign cystic terratoma)

Complications

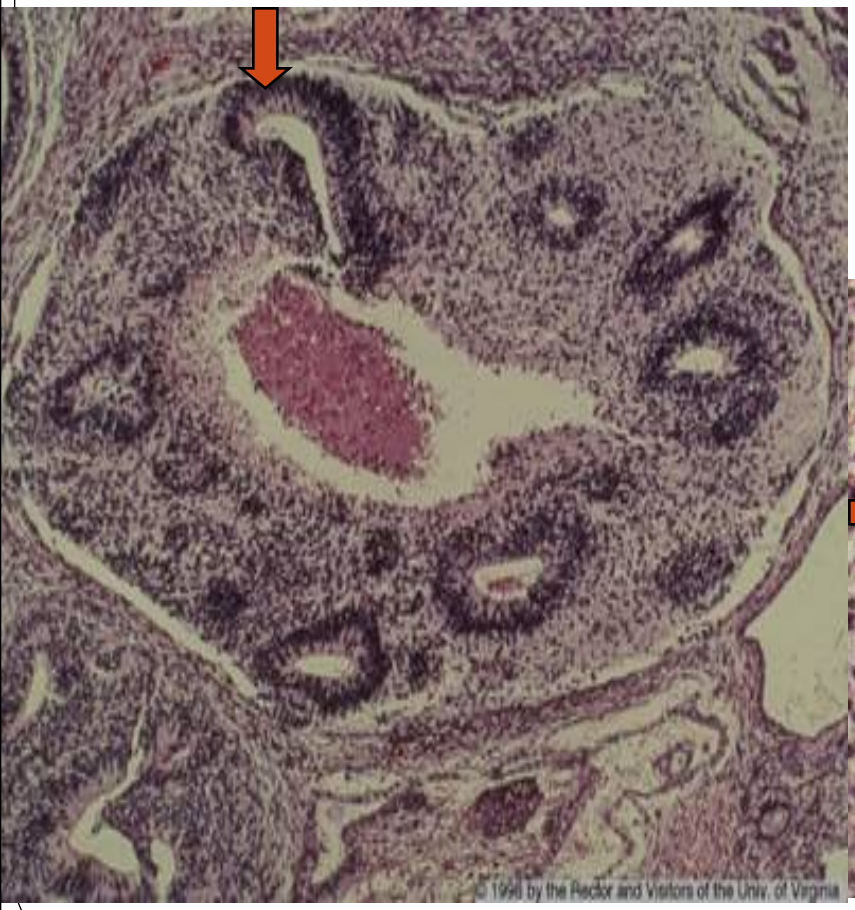
- Torsion 10%
- Rupture 1%
- Infection
- Hemolytic anemia-splenomegaly
- Malignancy

Immature Teratoma

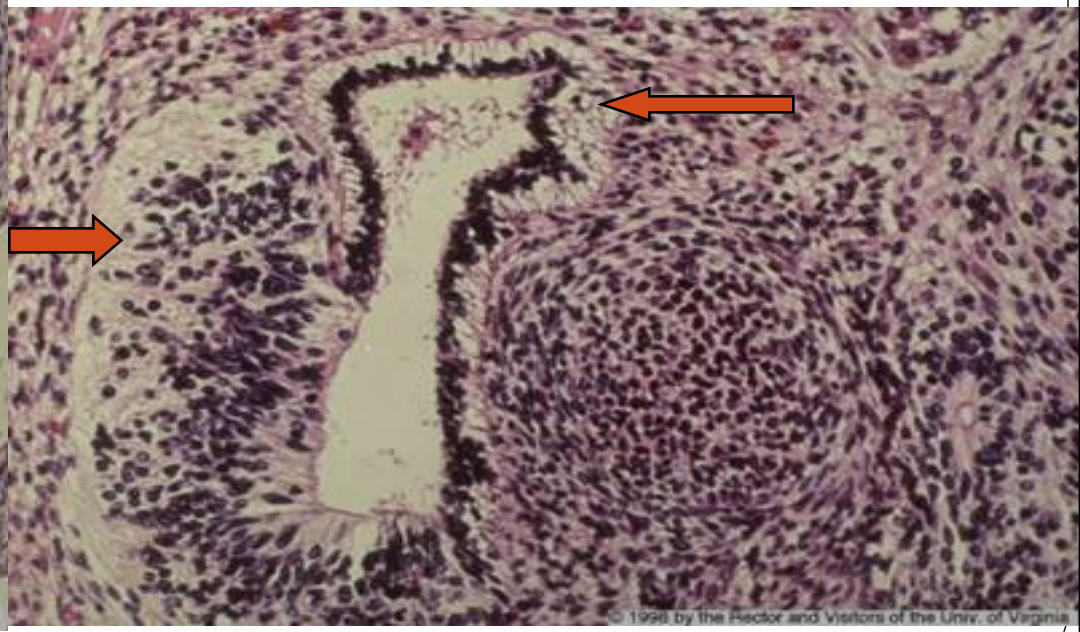


- Solid/ necrosis &hemorrhage

Immature Teratoma



- primitive neuroepithelium with multiple neural tubes

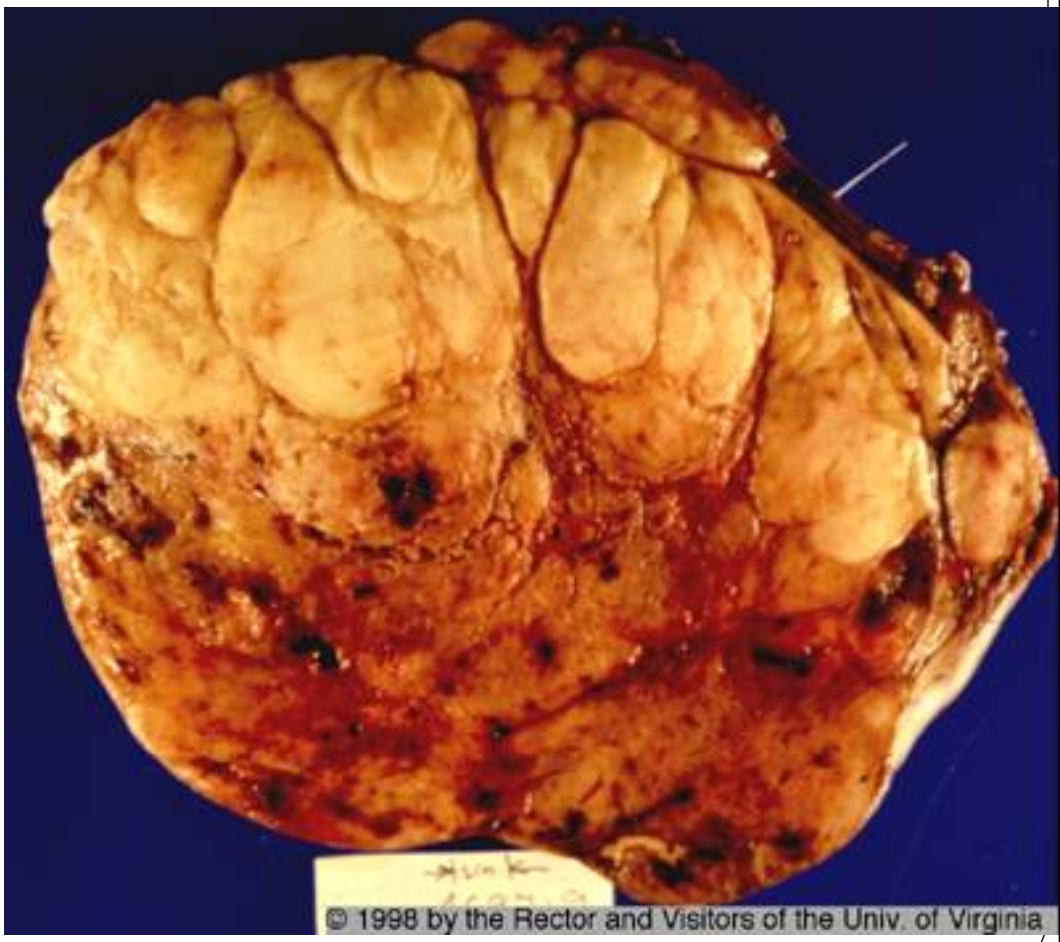


Dysgerminoma

- 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 .

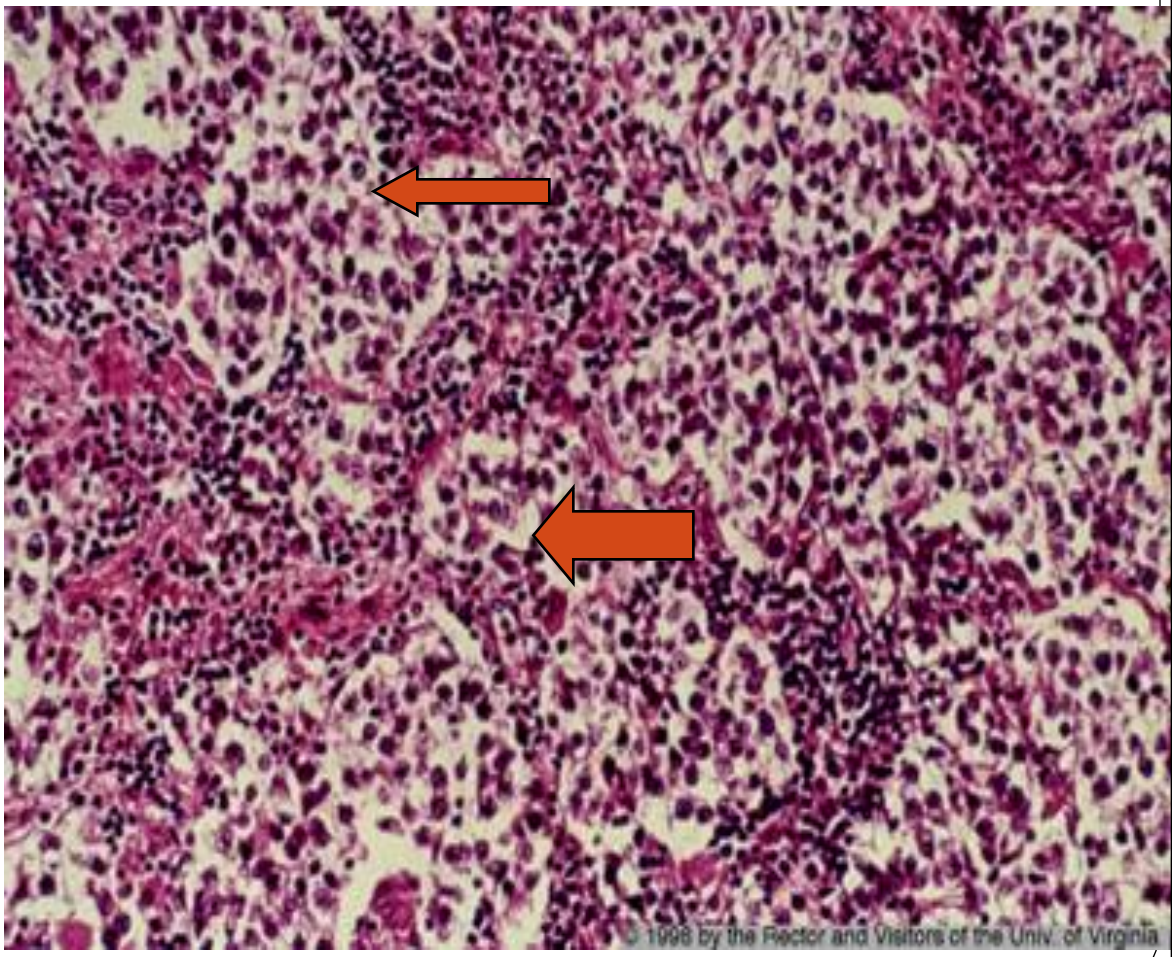
Dysgerminoma

•Solid/ lobulated mass with foci of hemorrhage



Dysgerminoma

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

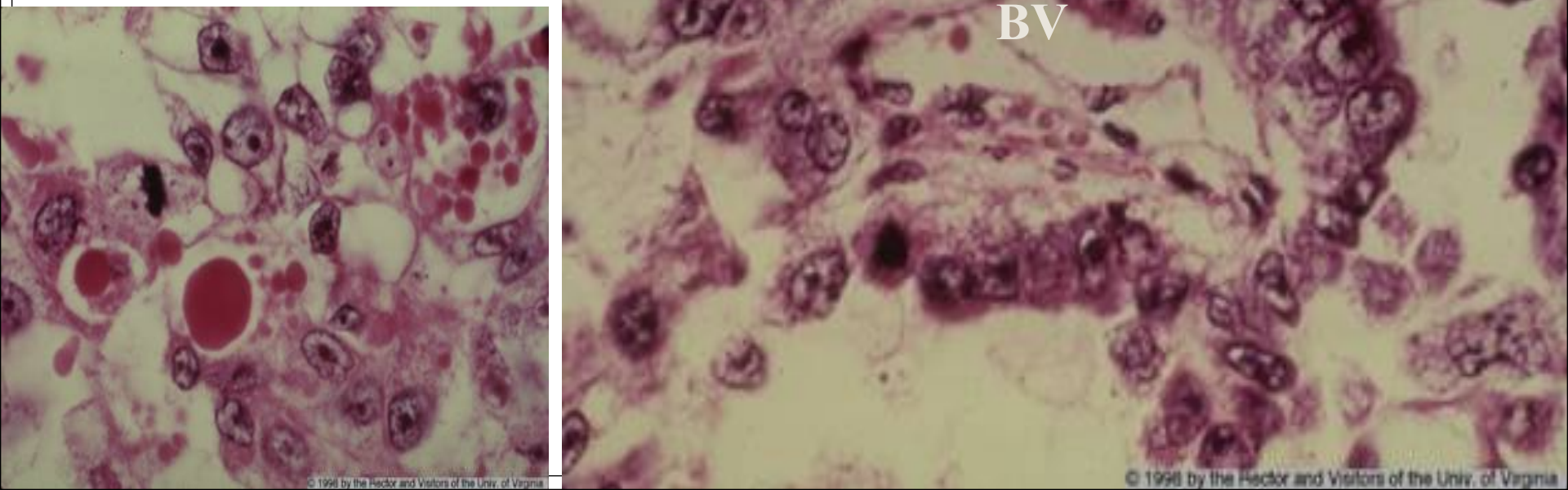


Endodermal sinus tumor (Yolk sac carcinoma)

- 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**

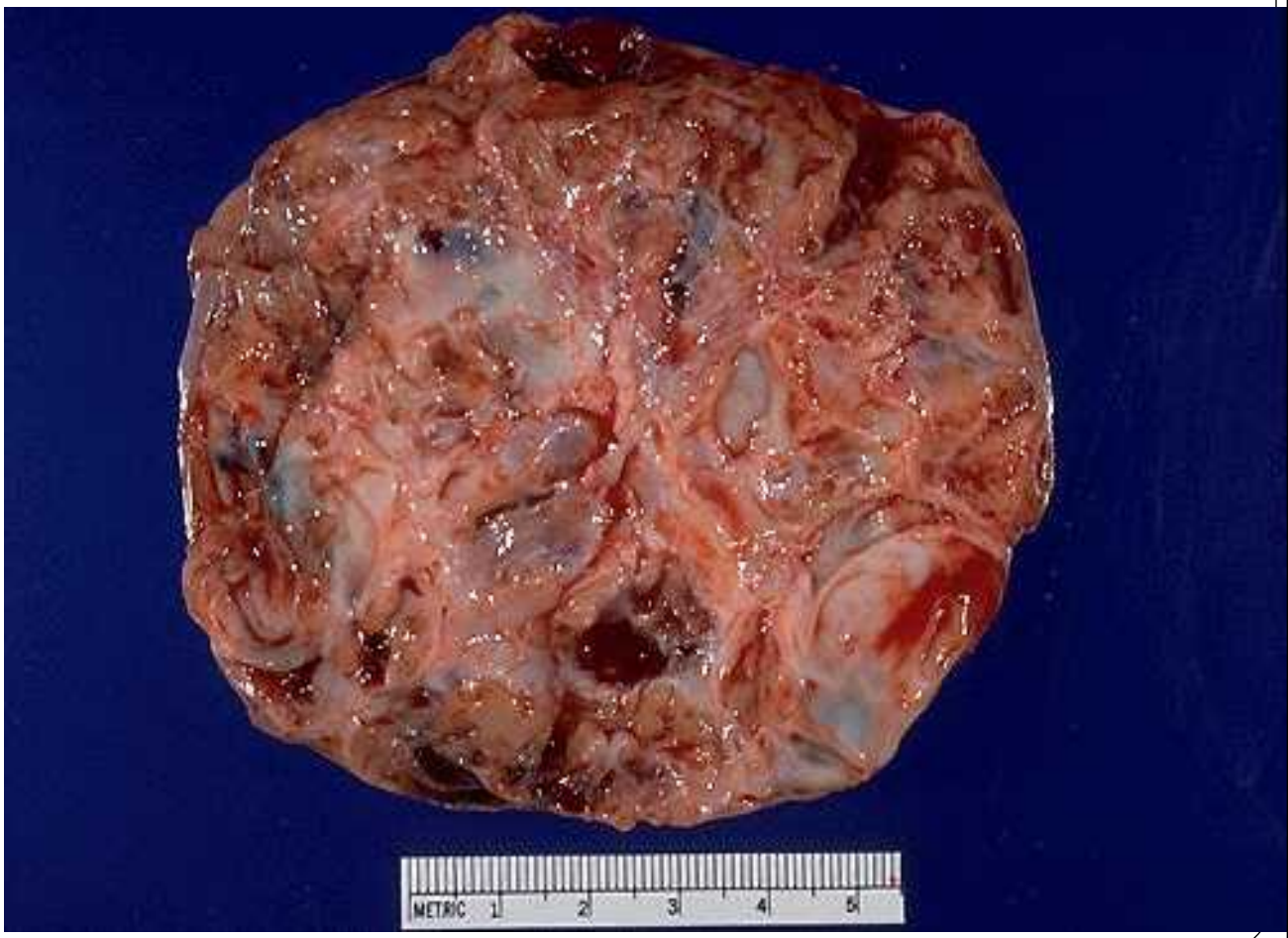
Granulosa Cell Tumor

- 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.**

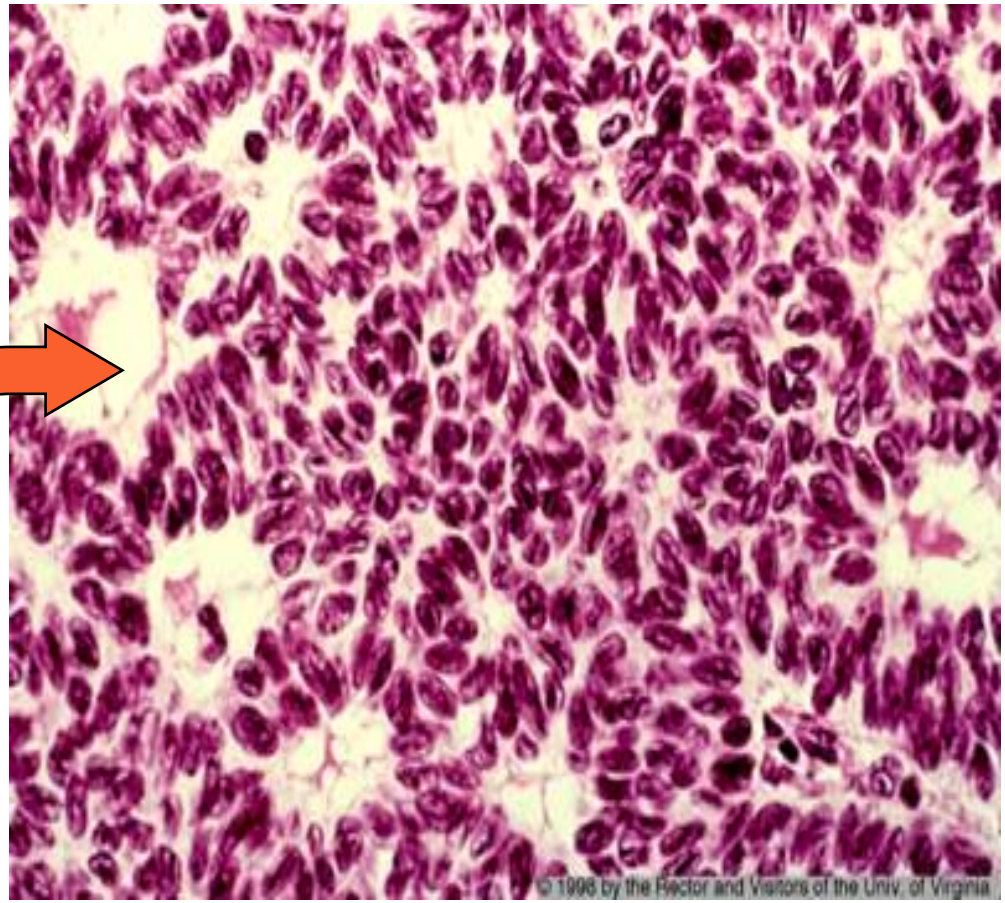
Granulosa Cell Tumor

•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).

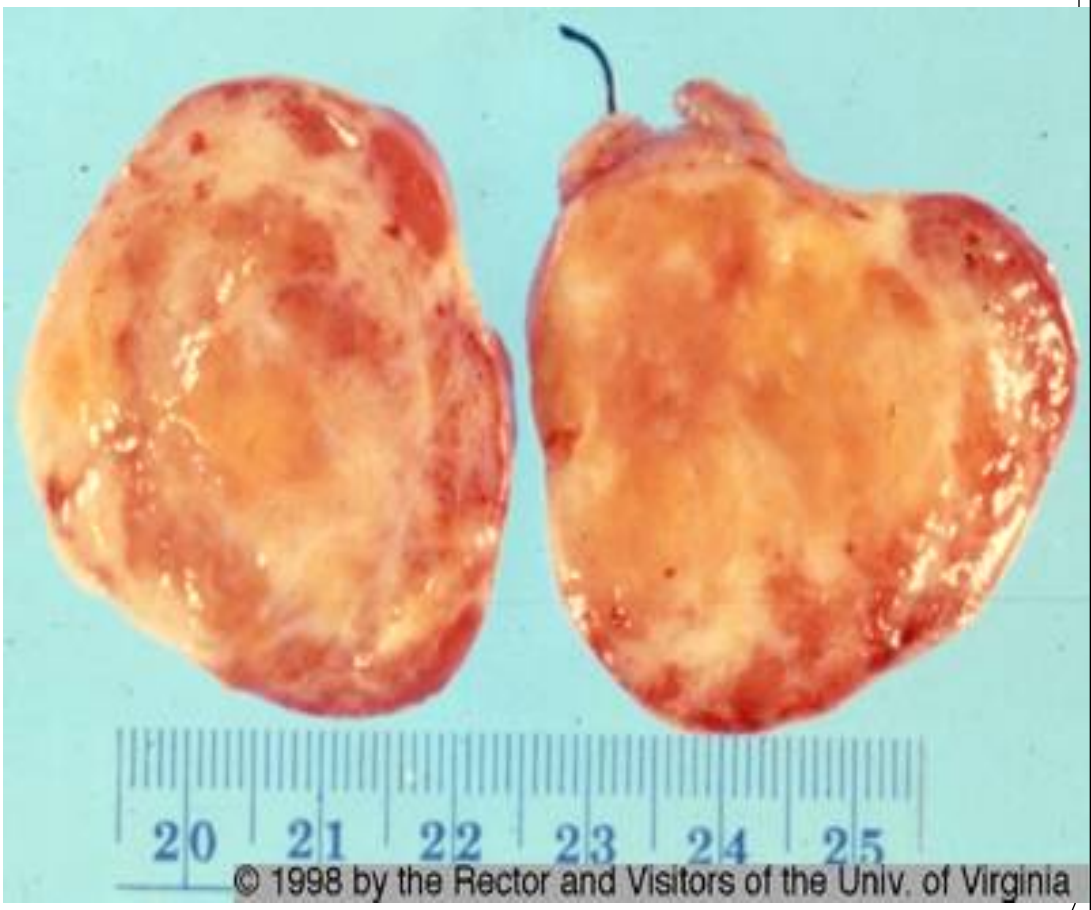


Thecoma

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

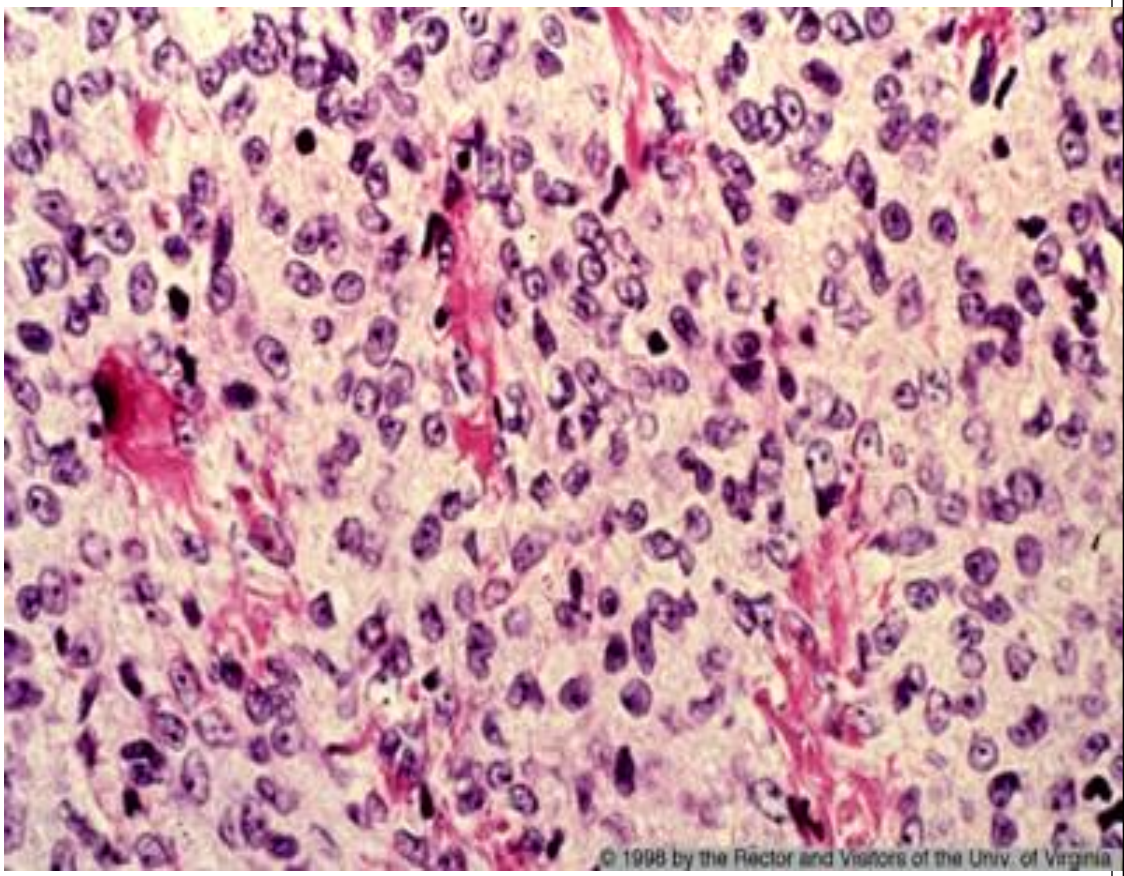
Thecoma

•Solid tumor with yellow - orange appearance.



Thecoma

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

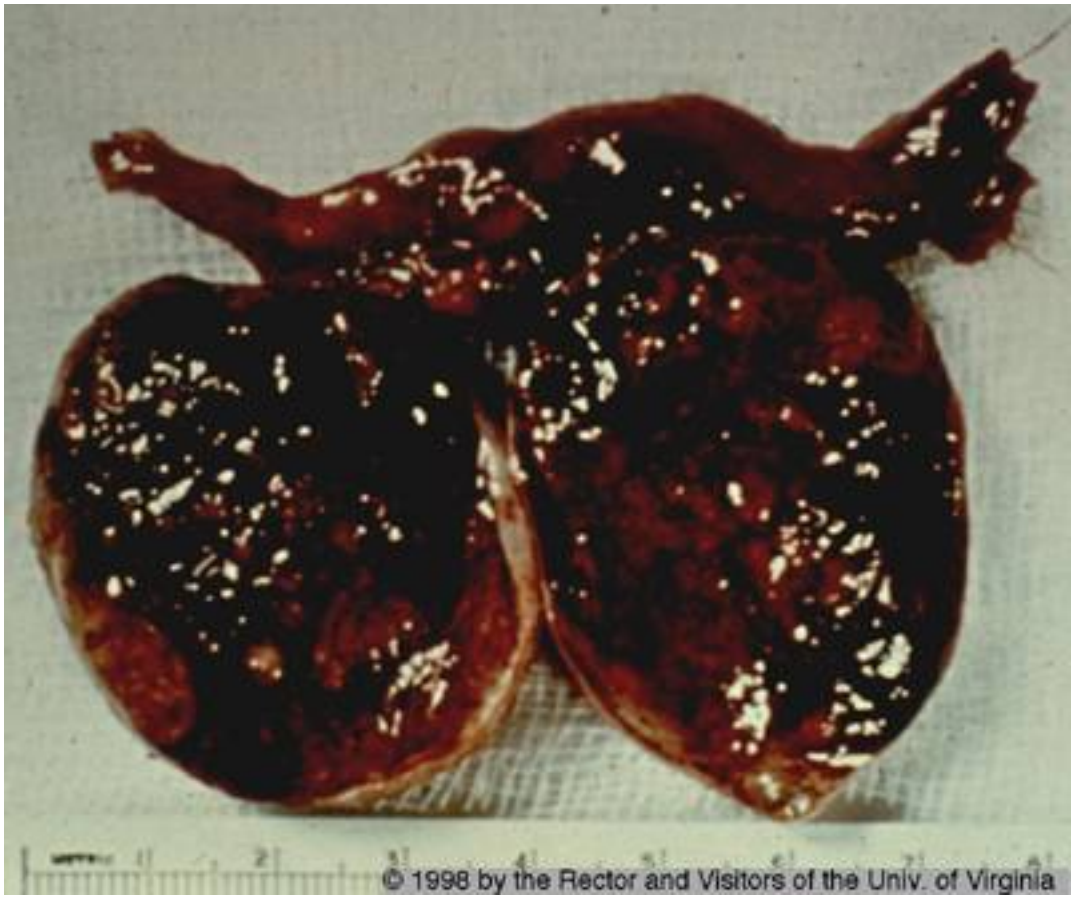


Sertoli-Leydig cell tumors

- 1% of ovarian neoplasms
- It occur 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

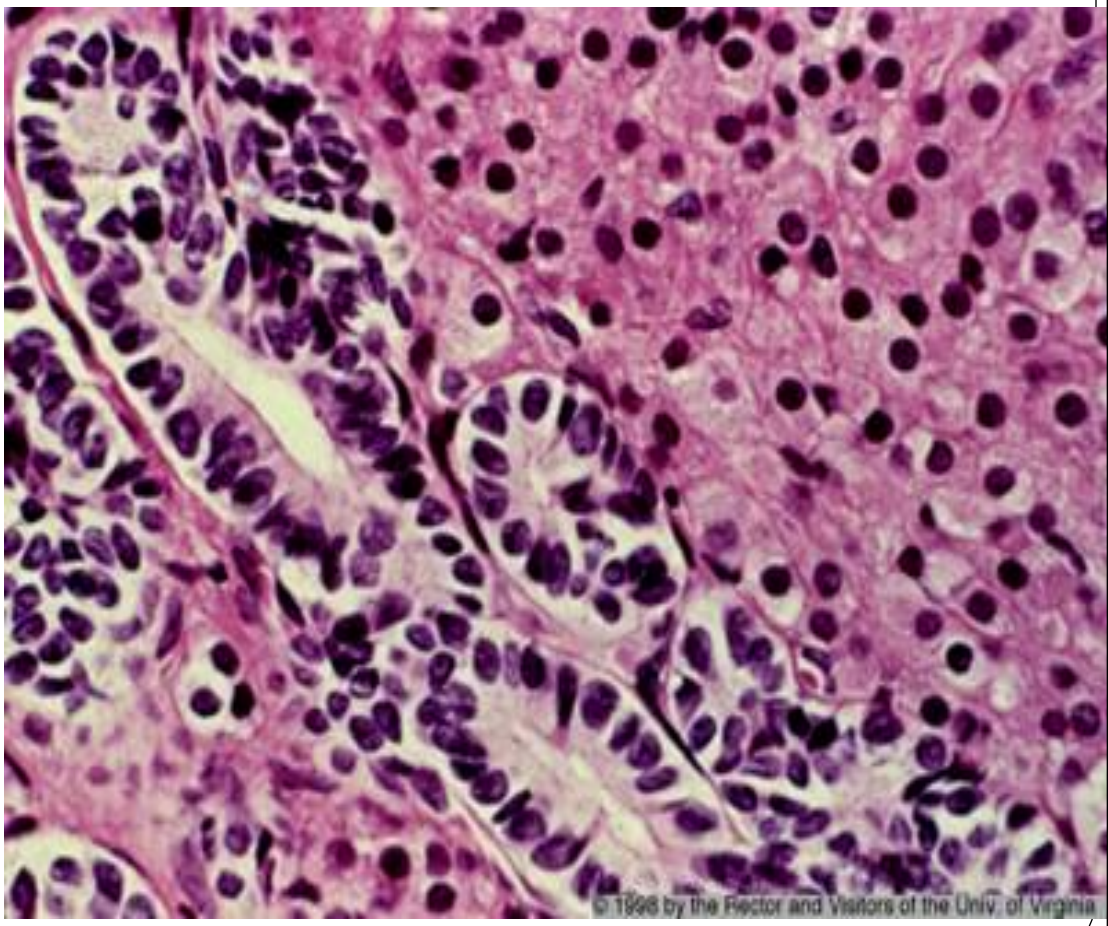
Sertoli-Leydig cell tumors

- solid & hemorrhage



Sertoli-Leydig cell tumors

•Tubules lined by Sertoli cells and sheet of Leydig cells



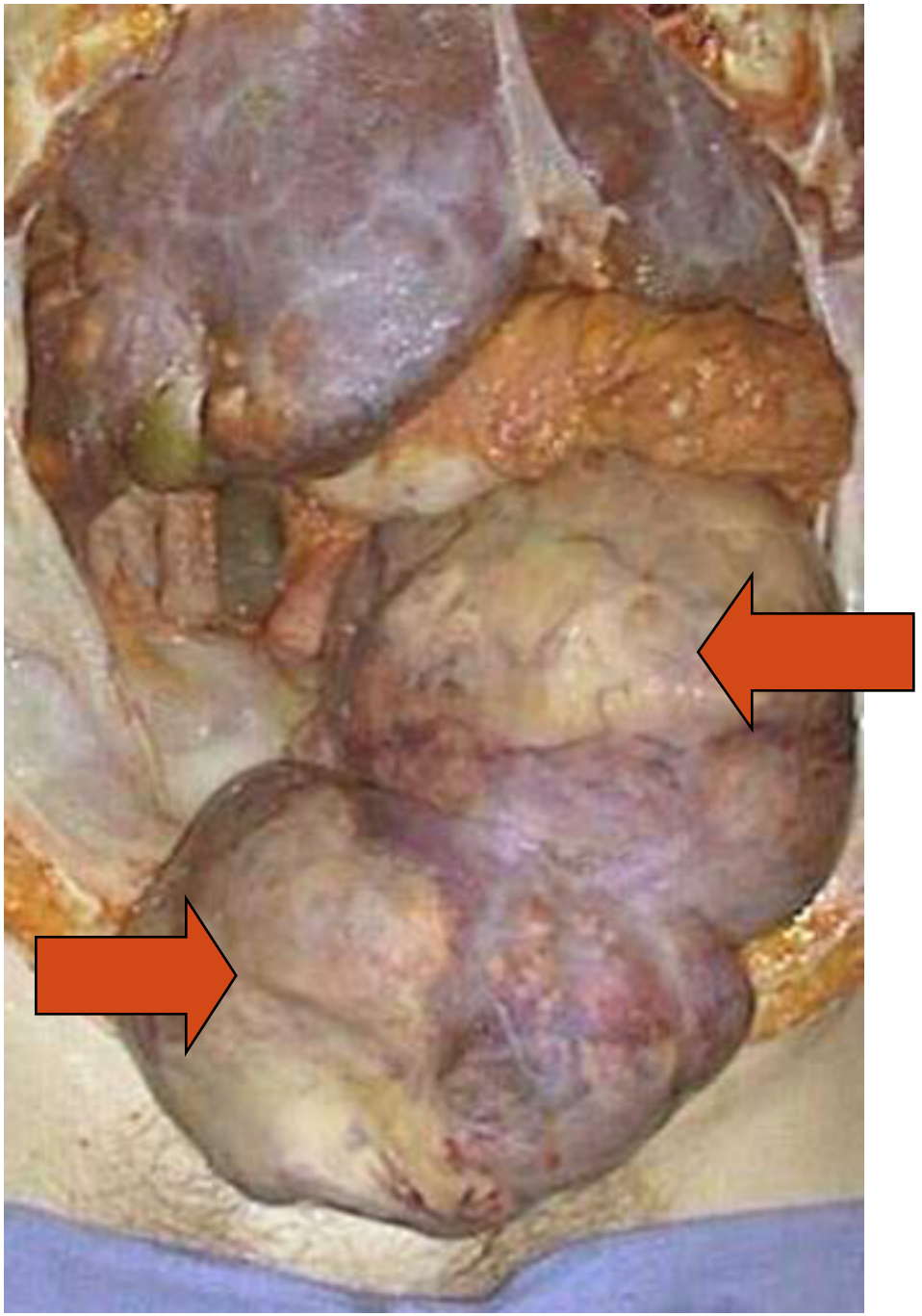
Metastases to ovary

- **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

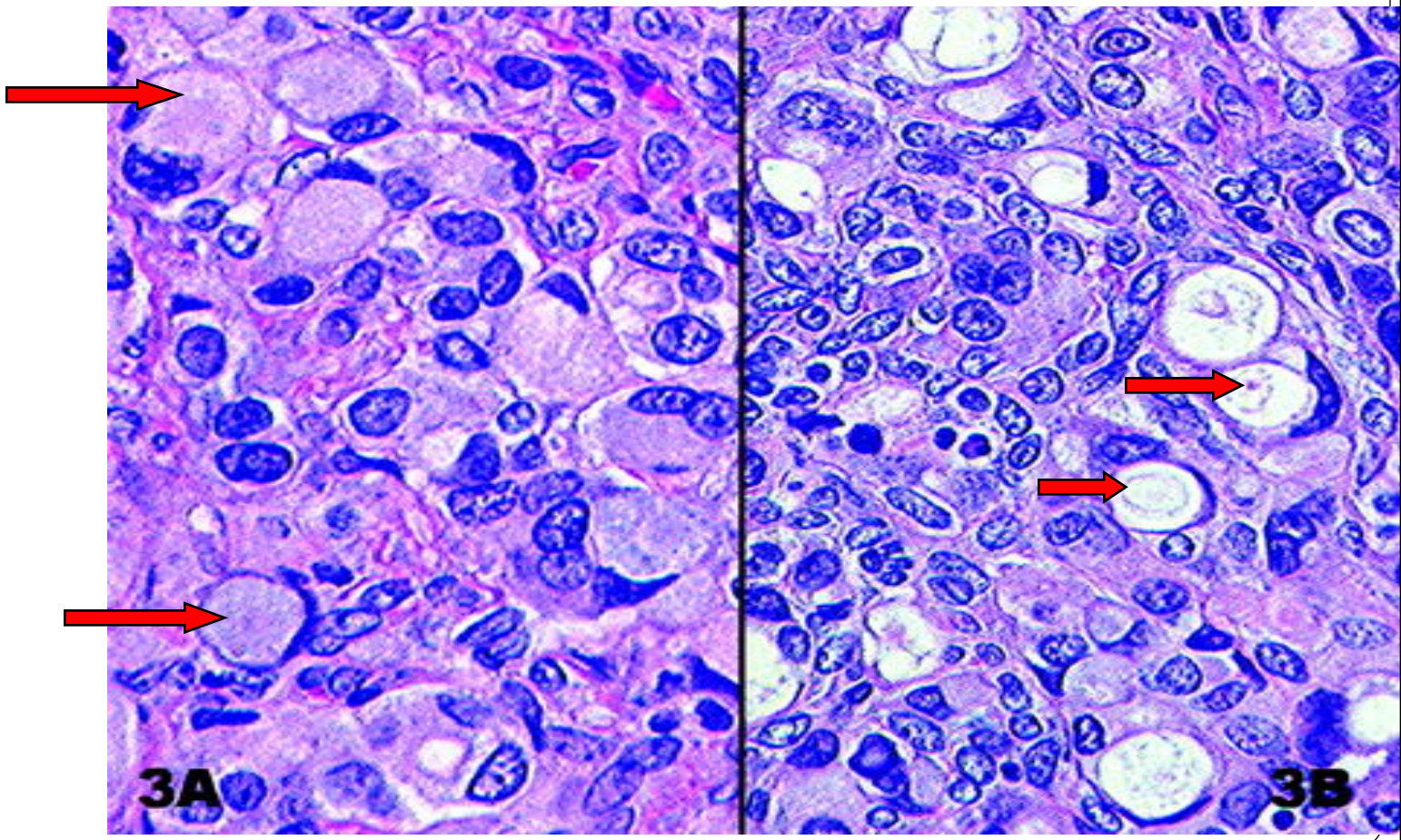
- It is applied to the uniform enlargement of the ovaries (usually bilaterally) due to diffuse infiltration of the ovarian stroma by **metastatic signet-ring cell carcinoma** .
- The commonest primary site is the stomach followed by the colon.

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

RMI = CA125 X M X 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

MANAGMENT

- 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

- Platinium based
- Taxol
- 6 cycles at 3 weekly intervals
- Monitoring:
  - examination
  - CA125
  - FBC, U&E

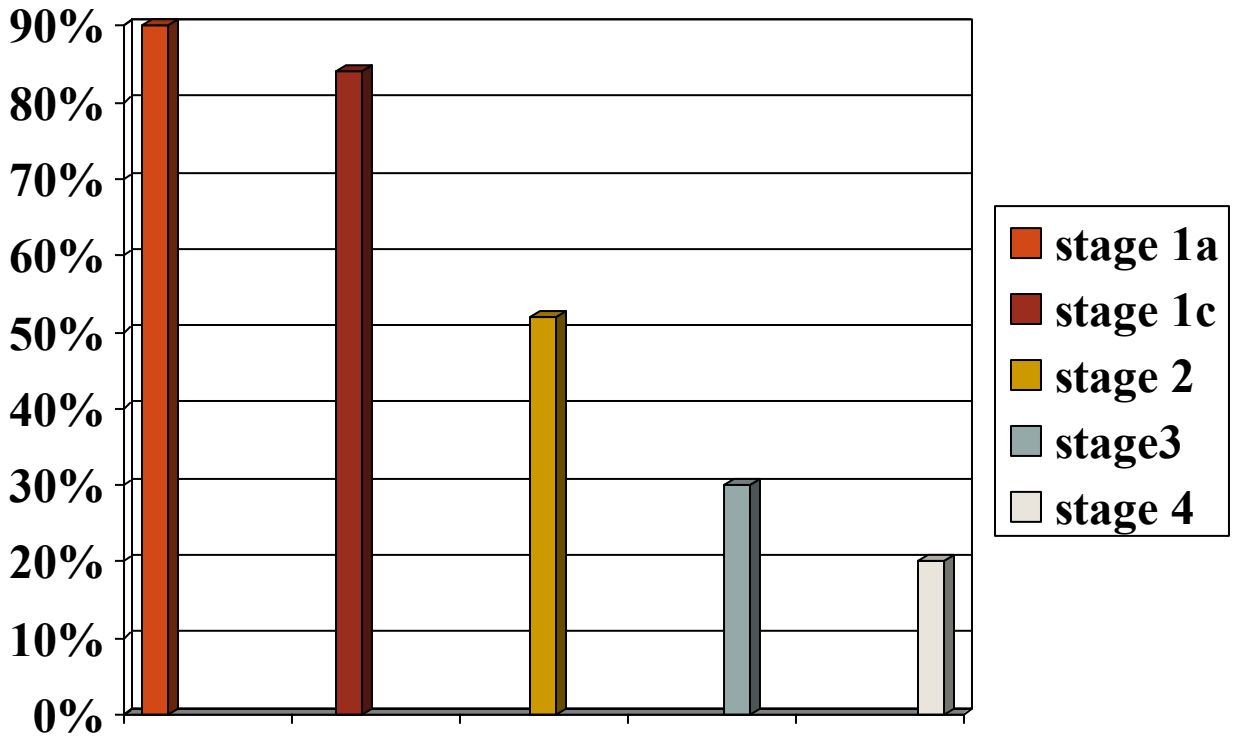
SECOND LOOK SURGERY

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

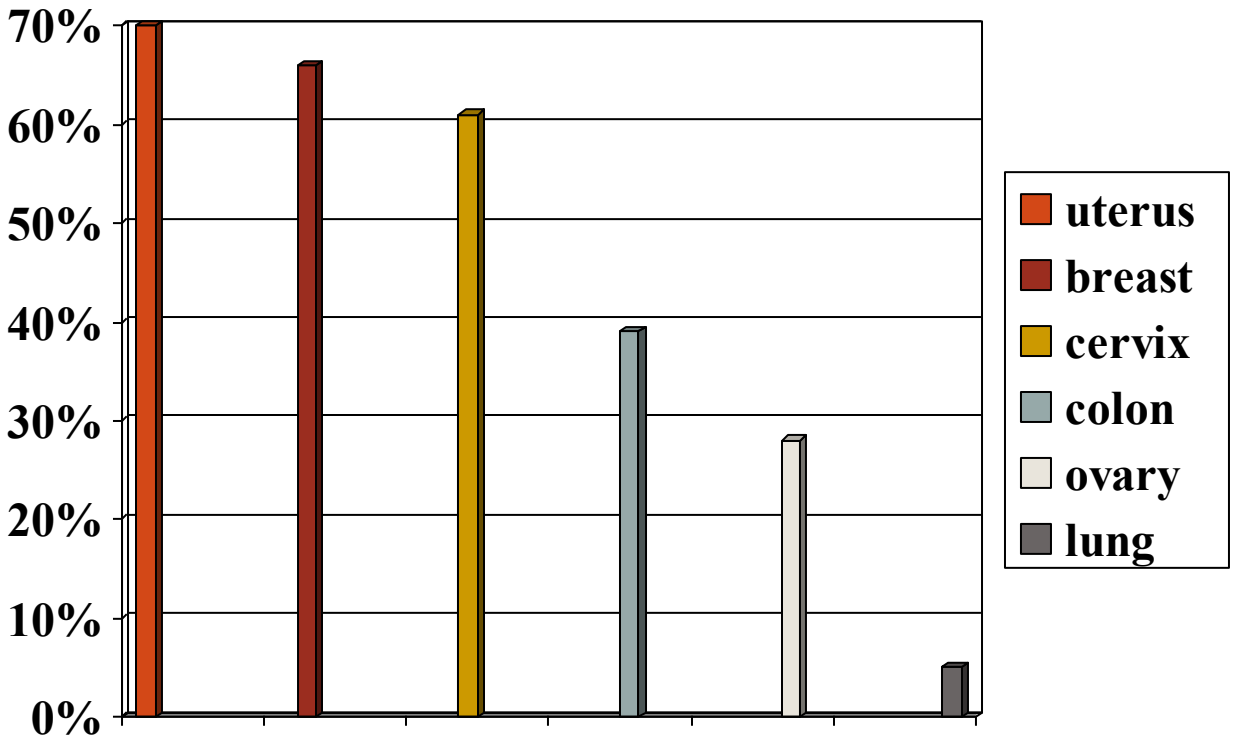
Palliative surgery

- 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