The Female Genital Tract

Marcela Jimenez, MD
The Female Genital Tract

1. **Vulva** (diseases of vulva in the aggregate constitute only a small fraction of gynecologic practice)

2. Vagina

3. Cervix

4. Uterus (Endometrium and myometrium)

5. Ovaries

6. Gestational and placental disorders
1. Non-neoplastic diseases:
Includes inflammatory skin diseases (to be reviewed on skin block) including psoriasis, eczema and allergic dermatitis.

Diseases specific to Vulva:
- Bartholin Cyst
- Lichen sclerosus
- Squamous cell hyperplasia or *lichen simplex chronicus*
Bartholin’s glands (one on each side) are located on each side of the vaginal opening. These glands secrete mucus like fluid that helps lubricate the vagina.

When the openings of this glands become obstructed (inflammation), fluid accumulates back up into the gland, causing a cyst to form.

If this cyst becomes infected, pus accumulates and results in abscess.

A disease of reproductive age woman
Lichen Sclerosus

- Clinical:
  Smooth white plaques that in time coalesce (leukoplakia with parchment-like vulvar skin)

When the entire vulva is affected, the labia become atrophic and stiffened, and the vaginal orifice is constricted.

**Post-menopausal** women

Possible autoimmune origin

Small risk for developing carcinoma
Lichen Sclerosus

Histology:
- Thinned epidermis with disappearance of rete pegs
- Dermal fibrosis with a scant perivascular, mononuclear infiltrate

Pathogenesis: Uncertain
Squamous cell hyperplasia

*Lichen simplex chronicus*

Histology:
- Marked epithelial **thickening**
- Expansion of the stratum granulosum
- Significant surface hyperkeratosis

Small risk for developing carcinoma
Squamous cell hyperplasia

*Lichen simplex chronicus*

**Leukoplakia** with thick, leathery vulvar skin
Associated with chronic irritation and scratching
VULVA: Tumors

1. Benign: Condyloma acuminatum

2. Malignant:
   - Vulvar Intraepithelial Neoplasia (VIN) and vulvar carcinoma
   - Extra-mammary Paget Disease
   - Malignant Melanoma
CONDYLOMA ACUMINATUM

• Sexually transmitted
• Verrucous gross appearance
• Usually multifocal

• Caused by HPV (Human papilloma virus) types 6 and 11.
Laryngeal papillomas

Caused by HPV-6 and HPV-11 infection.

Children papillomatosis:
vertical transmission
related to maternal genital infection.

Prevented with C-section
VULVAR CARCINOMA

- Carcinoma of the vulva is uncommon (3% of female genital cancers)
- Presents as leukoplakia, requires biopsy

SQUAMOUS CARCINOMA, MOST COMMON

- Basaloid and warty carcinomas: related to infection with high risk HPV: 30%.
  - Less common, occur at younger ages (reproductive age)

- Keratinizing Squamous carcinomas, not related to HPV: 70%
  - Occur in older women (7th decade)
1. **BASALOID OR WARTY CARCINOMAS (HPV INFECTION):**

   - Low-grade dysplasia
   - Moderate-dysplasia
   - Severe dysplasia (Carcinoma In-situ)
   - Invasive squamous carcinoma.

10-30% of females with carcinoma In-situ of the vulva also have HPV-related lesions of the vagina and cervix.
VULVAR NEOPLASIA/CARCINOMA

2. NON-HPV related: Keratinizing squamous carcinoma
Etiology is unknown but is postulated as chronic irritation
Usually old >76 y/o
HPV

DNA Virus

More than 40 types

Viral E6 and E7 proteins are critical for the oncogenic effects of HPV (because of destruction of the tumor suppressor proteins p53 and Rb)

For discovery of HPV as a cause of “cervical cancer”, Harald zur Hausen was awarded the NOBEL prize in 2008.

Sexually transmitted

Types important to remember:

- HPV 6 and HPV 11: Sexually transmitted vulvar, perineal and perianal condyloma acuminatum

- **HPV 16 (60%)** and HPV 18 (10%): Neoplastic (cancer)
  - Other High risk: 31, 33
HPV lesions

Hands and feet: Common warts

Penis, vagina, vulva, cervix and around anus: Genital warts (condyloma acuminatum)

Oropharyngeal lesions: papillomas, papillomatosis
HIGH PEAK of HPV 20’s (due to sexual debut)

DECREASE: monogamous relationships
Risk Factors for HPV related cancer:

1. Multiple sexual partners
2. A male partner with multiple previous or current sexual partners
3. Young age at first intercourse
4. High parity
5. Persistent infection with a high oncogenic risk HPV
6. Immunosuppression
7. Certain HLA types
8. Use of oral contraceptives
9. Use of nicotine
GOOD NEWS

Genital HPV infections are extremely common, most of them asymptomatic, do not cause tissue changes.

Most HPV infections are **transient and are eliminated** by the immune response in the course of months.

- 50% of HPV infections are cleared within 8 months
- 90% are cleared within 2 years.

**Persistent infection** increases the risk of cervical and vulvar cancer
Histology

HPV infects immature basal cells

Virus replicates in mature squamous cells resulting in a cytopathic effect: “koilocytic atypia”
EXTRAMAMMARY PAGET DISEASE

Clinical:
Pruritic, erythematous (red), crusted, sharply demarcated, map like area on the labia majora

Histology:
• Large tumor cells with a clear “halo”.
• It is a CA in-situ, usually not underlying carcinoma
• DD: melanoma (rare in vulva)
100% of patients have an underlying breast carcinoma.

Intraepidermal Paget disease may persist for many years, even decades, without invasion or metastases. **Invasion develops rarely**, and in such patients the prognosis is poor.
MALIGNANT MELANOMA

Melanoma will be reviewed in detail in the skin block.

Less than 5% of vulvar cancers.

2% of all melanomas in women.
The Female Genital Tract

1. Vulva
2. Vagina
3. Cervix
4. Uterus (Endometrium and myometrium)

1. Ovaries
2. Gestational and placental disorders
VAGINA

1. Benign Lesions:
   Developmental anomalies: secondary to in-utero exposure to diethylstilbestrol (DES) used to prevent miscarriage, premature labor and related complications of pregnancy between 1940-1960.

2. Tumors:
   - Vaginal Intraepithelial Neoplasia and squamous cell carcinoma
   - Embryonal Rhabdomyosarcoma (girls <5 y/o)
Diethylstilbestrol (DES) and Cancer

- DES is a synthetic form of estrogen (Pills, creams and vaginal suppositories)
- Prescribed to pregnant women between 1940-1971 to prevent miscarriage, premature labor, and related complications of pregnancy.
- Women who took DES have an increased risk of breast cancer
- Daughters (DES-DAUGHTERS) have an increased risk of clear cell adenocarcinoma (rare cancer) of the vagina and cervix, and increased risk of breast cancer, as well as fertility problems and immune system problems.
- Sons (DES-SONS) have an increased risk of testicular abnormalities including undescended testicles or cysts on epididymis. Prostatic cancer risk is unclear. Testicular cancer is unclear.
- DES grandchildren?? (Still under research)
Diethylstilbestrol (DES) and Cancer

Recommend for DES-Daughters:
• Annual medical examination (Pelvic exam, Breast exam)
• PAP test and colposcopy: A routine cervical PAP is NOT-ADEQUATE. The PAP needs to gather cells from cervix and vagina.
• Biopsy
• Mammograms

Recommend for DES mothers:
• Regular breast cancer screenings.
The most common malignant neoplasm of vagina is metastasis from cervix.

Primary is rare. Squamous cell carcinoma (arising on the squamous epithelium of the vagina), related to high risk HPV.

Progression from low-grade, moderate to high-grade dysplasia, to invasive carcinoma.
Embryonal Rhabdomyosarcoma

“sarcoma botryoides”
- Infants <5y/o
- Clinically: polypoid, round, bulky mass that protrudes out of the vagina “grape-like clusters”
Embryonal Rhabdomyosarcoma

Histology:

Small cells with oval nuclei with small protrusions of cytoplasm.

Cross-striations within cytoplasm

Positive for desmin and myogenin
The Female Genital Tract

1. Vulva
2. Vagina
3. **Cervix**
   - Ectocervix: Non-keratinizing squamous epithelium
   - Endocervix: glandular epithelium (simple columnar)
   - Transformation Zone: junction
4. Uterus (Endometrium and myometrium)
5. Ovaries
6. Gestational and placental disorders
CERVIX

1. NON-Neoplastic/ Inflammatory:
   Infections: gonococci, chlamydia, mycoplasmas and herpes simplex virus

2. TUMORS
   - Benign: endocervical polyp
   - Premalignant and malignant
CERVICAL INTRAEPITHELIAL NEOPLASIA

Old terminology: mild, moderate and severe dysplasia

Recent terminology (three-tier): **CIN I** (mild), **CIN-II** (moderate) and **CIN-III** (severe)

Clinical decisions based on two-tier:
**CIN-I**: Low-grade squamous intraepithelial lesion
**CIN-II and CIN-III**: High grade squamous intraepithelial lesion

Most LSIL *regress spontaneously* (not treated as a premalignant lesion)
The higher the dysplastic grade the more likely it is to progress to carcinoma, and the less likely it is to regress to normal
SIL: nuclear atypia, enlargement, hyperchromasia (dark), variation in nuclear size.

Koilocytosis: involves mature squamous cells, binucleation and cytoplasmic halos

CIN-I: atypia confined to lower 1/3 of epithelium
CIN-II: atypia 2/3 of epithelium
CIN-III: full thickness atypia (Carcinoma IN-SITU)
In cells infected with oncogenic HPV, there is overexpression of p16
100% of HSIL

HPV 16 and HPV 18
Cervical Carcinoma: carcinoma arising within epithelium (HPV related)

80% Squamous cell carcinoma

CIN-III (HSIL) is an immediate precursor

15% Adenocarcinomas
Cervical Carcinoma: carcinoma arising within epithelium

- Most common in middle age women (40-50)
- Presents as vaginal bleeding (post-coital bleeding or cervical discharge)
- Risk factors: High risk HPV, smoking, immunodefiency
- Prevention: PAP smear is the gold standard for screening (progression from CIN to carcinoma on average takes 10-20 years)

“PAP smear is the most successful screening test developed to date”
The Female Genital Tract

1. Vulva
2. Vagina
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4. **Uterus (Endometrium and myometrium)**
5. Ovaries
6. Gestational and placental disorders
Endometrium (epithelium): glands and endometrial stroma

Myometrium: smooth muscle
UTERUS

1. Inflammatory/ Infectious lesions:

   **Acute endometritis**: uncommon and limited to bacterial infections that arise after delivery (retained POC) or miscarriage.
   **Clinical**: fever, abnormal bleeding and pelvic pain.
   Group A hemolytic streptococci, staphylococci
   **Tx**: AB + Curettage

   **Chronic endometritis**: chronic inflammation of endometrium
   - Patients suffering from chronic PID
   - Post-partum or post-abortion
   - IUD devices
   - Women with tuberculosis
   **Clinical**: abnormal uterine bleeding, pain and infertility
Cont. Inflammatory/Infectious lesions:

**Endometriosis/ adenomyosis**

**Endometriosis:** presence of endometrial tissue **outside** the uterus. It occurs in the following sites (in order of frequency):

- Ovaries ***
- Uterine ligaments
- Rectovaginal septum
- Cul de sac
- Pelvic peritoneum

Clinical presentation: INFERTILITY, dysmenorrhea (painful menses), pelvic pain

Women of reproductive age (3rd-4th decades)

Endometriosis can give rise to carcinoma

There is a small risk for carcinoma
Endometriosis

1. **Metastatic theory:**
Endometrial tissue is implanted at abnormal locations. Retrograde menstruation through the fallopian tubes, lymphovascular spread and iatrogenic implantation:
Evidence to support theory:
   - In-vitro growth of shed endometrium in peritoneal fluid
   - In-vitro growth of deliberately implanted endometrial cells in subcutaneous fat
   - Higher frequency of endometriosis in women with excessive retrograde flow

2. **Metaplastic theory:**
Endometrium could arise from epithelium lining the pelvic peritoneum or Müllerian remnant tissue into functioning endometrial cells.
Evidence to support theory:
   - Endometriosis in men (rare)
   - Endometriosis in females lacking functional ectopic endometrium (Turner syndrome, uterine agenesis)
Pelvic endometriosis

Endometriosis within myometrium: Adenomyosis

Endometrioid ovarian cyst: Chocolate cyst (endometrioma)
Histology diagnosis:
Both endometrial glands and endometrial stroma present
**HYPERPLASIA DEFINITION:**

Hyperplasia is an increase in the number of cells in an organ or tissue, usually resulting in increased mass of the organ or tissue.

Endometrial hyperplasia: due to prolonged estrogen stimulation increased number of glands resulting in an increased gland to stroma ratio.
Clinical presentation

Post-menopausal bleeding

Postmenopausal bleeding could be a sign of endometrial hyperplasia or excessive growth of uterine cells.

Any bleeding during postmenopause should be examined immediately by a doctor.
Histology: 4 categories

According to architecture:
- Simple
- Complex

According to nuclear atypia:
- With atypia
- Without atypia

Categories:
- Simple without atypia: 1% progress to carcinoma
- Simple with atypia: 8% progress to carcinoma
- Complex without atypia: 3% progress to carcinoma
- **Complex with atypia: 23-48% progress to carcinoma**
Endometrial carcinoma (malignancy arising from endometrial glands)

**ENDOMETRIOID TYPE (75% cases) (Type I Robbins):**
ESTROGEN (55-65 y/o), associated with hyperplasia

**NON-ENDOMETRIOID (25% cases) (Type II Robbins),** including **serous, clear cell and mixed Müllerian tumor:**
- Not related to estrogen exposure
- Older females, 65-75 y/o
- Mutation of the **p53 tumor suppressor gene**
- Poor prognosis
ENDOMETRIAL CARCINOMA
(Endometrioid type)

- Post-menopausal women (55-65 y/o)
- Post-menopausal bleeding

Related to unopposed estrogen:
- Obesity
- Diabetes
- Hypertension
- Infertility

Mutations of the PTEN tumor suppressor gene have been identified in 30% to 80% of endometrioid carcinomas and 20% of endometrial hyperplasia.
Endometrial carcinoma Histology

85% are **endometrioid** adenocarcinoma

Other types **non-endometrioid** include: Serous, clear cell and mixed Müllerian tumor
MYOMETRIUM

TUMORS:

Benign: Leiomyomas
Malignant: Leiomyosarcomas
Leiomyomas: Fibroids

Most common tumor (benign) in women

Origin: smooth muscle

Usually multifocal

Respond to estrogen: enlarge during pregnancy and shrink after menopause

25-50% women childbearing age
Clinical: abnormal uterine bleeding, infertility and a pelvic mass

Gross: multiple, sharply circumscribed, round, firm, gray-white tumors

Histology:
Bundles of smooth muscle cells, uniform in size and shape. Rare mitotic figures.
Leiomyosarcomas (malignant smooth muscle tumors)

Equally common before and after menopause

Peak 40-60 y/o

Tendency to metastasize

5 year survival 40%.
Leiomyosarcomas

Gross: bulky, fleshy masses that invade the uterine wall or polypoidal masses that project into the uterine lumen

Histology:
Bundles of smooth muscle cells with pleomorphic (enlarged and irregular nucleus) and abundant mitotic figures.
OVARIES

1. NON-Neoplastic/ Functional cysts:
   - Follicle and luteal cysts
   - Polycystic ovaries and stromal hyperthecosis

2. TUMORS
   - Surface epithelium tumors
   - Sex-cord stromal tumors
   - Germ cell tumors
   - Metastatic
Follicle:

- **Oocyte**

- **Granulosa cells (FSH):** They have FSH receptors
  - Convert androgen to estradiol
  - Estradiol promotes proliferation of granulosa cells and increases responsiveness to FSH (positive feedback)
  - Estradiol and FSH induce granulosa cells to synthesize LH receptors
  - Granulosa cells produce progesterone

- **Theca cells (LH):** androgen production
- Theca cell: aromatase activity is absent
- Granulosa cells are deficient in the androgen-producing enzymes. Therefore, they rely on androgens from thecal cells to produce estrogens
- Granulosa cell (under LH): blocks 17 alpha-hydroxylase and the 17,20 desmolase
- **Preovulation:** Granulosa cells produce Estradiol

- **After-ovulation:** Follicle becomes a corpus luteum that secretes progesterone (secretory phase on endometrium to prepare it for implantation)
Cystic follicles

• They are so common, that they are considered virtually normal.
• They originate in unruptured graafian follicles or in follicles that have ruptured and immediately sealed
• Usually multiple
• Size: up to 2cm
Luteal cysts (corpus luteum cyst)

Normal ovarian cycles:
The corpus luteum consist of luteinized thecal and luteinized granulosa cells that forms after ovulation (remains of the ovarian follicle).
Polycystic ovaries and stromal hyperthecosis

• Polycystic ovarian disease “Stein Leventhal syndrome” 3-6% of reproductive age women.
• Numerous cystic follicles due to hormone imbalance, often associated with oligomenorrhea.
• **High levels of LH** that leads to anovulation, **hyperandrogenism** due to steroid synthesis by theca cells.
• Women with POCD have persistent anovulation (amenorrhea), obesity, hirsutism and rarely virilism.
Classic case

Obese young female with infertility, oligomenorrhea and hirsutism.

Some patients have insulin resistance and may develop type 2 DM 10-15 years later.
Hirsutism: Presence of excessive terminal hair in androgen-dependent areas of woman body
Hirsutism: Presence of excessive terminal hair in androgen-dependent areas of woman body
Polycystic ovarian disease (cont)

Ovaries:
- 2X size with an outer cortex studded with subcortical cysts (0.5 -1.5cm)
- Stromal hyperthecosis: cortical stromal hyperplasia, on histology enlarged stromal cells.
Ovarian Tumors (80% benign)

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Ovarian Tumors

- Ovarian cancer only 3% of all female cancers
  BUT

- Most ovarian cancers are detected when they have spread beyond the ovary, and they account for a very high number of deaths
TUMORS OF SURFACE EPITHELIUM

80% of all ovarian epithelial tumors are benign (usually in younger females). Malignant ones usually in older females but only 3% of all cancers.

1. **SEROUS TUMORS** (50% of all ovarian epithelial tumors) ***
   - Benign 60%
   - Borderline 15%
   - Malignant 25%

2. **MUCINOUS TUMORS**
   - Benign 80%
   - Borderline 10%
   - Malignant 10%

3. **ENDOMETROID CARCINOMA**
SEROUS TUMORS

• RISK FACTORS: Little is known but include nulliparity, family history and mutations.

BRCA1 and BRCA2: increase susceptibility to breast cancer and ovarian cancer (20 to 60% risk on positive patients by the age of 70)
SEROUS TUMORS
Malignant Serous Carcinoma

New classification

- Low-grade: appears to progress from serous borderline tumor
  
  Mutations KRAS or BRAF, low p53

- High-grade: "de novo"
  
  Mutations on p53, but lack KRAS or BRAF

BRCA 1/2: high grade, p53
Serous carcinoma, can be bilateral

Benign 20% bilateral
Borderline 30% bilateral
Carcinoma (malignant) 66% bilateral
Serous tumors prognosis (5 year survival)

- Borderline 100%
- Serous carcinoma confined to the ovary 70%
- Borderline involving peritoneum 70%
- Serous carcinoma involving peritoneum 25%
Mucinous Tumors

RISK FACTORS: Little is known, but recently an association with smoking
Mutation in KRAS

Less frequently bilateral (different from serous)

Histology: lined by tall columnar epithelial cells with apical cilia
Mucinous tumors, prognosis

Non-invasive (“intraepithelial” or no stromal invasion): 95%

Invasive (invasion of ovarian stroma): 90%

Spread beyond ovary, are FATAL but uncommon
Endometrioid tumors

- Resemble endometrioid carcinoma
- 15-20% co-exist with endometriosis
- Mutations in the PTEN tumor suppressor gene, KRAS and b-catenin oncogenes as well as microsatellite instability
Other surface epithelial tumors

- Clear cell adenocarcinoma
PREVENTION OF SURFACE EPITHELIAL TUMORS

Unfortunately often remain undiagnosed until large or spread to pelvis, NOT-CONFINED to ovary.

CA-125: present in the serum of 80% of patients with serous and endometrioid carcinomas
Problem: it can be elevated with non-specific irritation of peritoneum (not good for screening)
Ovarian Tumors (80% benign)

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GERM CELL TUMORS (15-20%)

GERM CELL

Neoplastic transformation

Mature

Benign
Mature cystic teratoma
Struma ovari

Malignant
Squamous carcinoma
Carcinoid
Thyroid carcinoma

Embryonal (multipotential)

Undifferentiated
Dysgerminoma

Primitive
Embryonal carcinoma

Extraembryonic
Yolk sac carcinoma

Trophoblast
Choriocarcinoma

Somatic
Immature teratoma

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TERATOMA

90% of germ cell tumors

MATURE (BENIGN): majority are cystic and are found in young women during active reproductive year

Bilateral in 10-15% cases

Wall of cyst: squamous epithelium with hair shafts, sebaceous glands
Cyst contents: hair, bone, cartilage, brain

Monodermal Teratoma: only one component, Struma ovary (only thyroid), carcinoid

1% become malignant (squamous carcinoma, melanoma, thyroid carcinoma)
Teratoma Movie
Immature Malignant Teratomas

Components resemble embryonal and immature fetal tissue (immature brain, bone, cartilage)

Young (prepuberal) 18 years

Grow rapidly, penetrate capsule, and spread locally or distantly
Dysgerminoma

Ovarian counterpart of seminoma of testis

2% of ovarian cancer vs. 30% of male tumors

Large polyhedral tumor cells with central round nucleus, with surrounding lymphocytes

Good prognosis: Responsive to chemo, overall survival 80%

Serum LDH might be elevated.
Endodermal Sinus (Yolk Sac) Tumor

- Rare tumor
- Rich in alpha fetoprotein and alpha-1-antitrypsin
- Schiller-Duval body (50%) “glomerulus-like structures” : central blood vessel surrounded by germ cells
Choriocarcinoma

Very aggressive, but rare (poor response to chemo)

Most choriocarcinomas exist in combination with other germ cell tumors

Identical to the placental Choriocarcinoma

High blood levels of hCG
### Ovarian Tumors (80% benign)

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SEX-CORD STROMAL TUMORS

Stromal cells:

- Male: Sertoli and Leyding ANDROGENS
- Females: granulosa and Theca ESTROGENS

1. Granulosa-Theca Cell Tumors
2. Fibromas, Thecomas and Fibrothecomas
3. Sertoli-Leyding Cell Tumors (Androblastomas)
GRANULOSA-THECA CELL TUMORS

2/3 in postmenopausal females

BENING

Elaborate large amount of estrogens
Young females: precocious puberty
Adult females: endometrial hyperplasia, cystic disease of breast
If they produce androgens: masculinization

Elevated Inhibin serum levels

Usually unilateral

Yellow-cut surface (lipids)

Small cells growth in cords, sheets or strands
Call-Exner body: gland-like structure filled with central acidophilic
FIBROMA, THECOMA, FIBROTHECOMAS

Tumors composed of fibroblasts (fibromas) or plump spindle cells with lipids (Thecomas)

Thecomas (rare): hormonally active
Fibromas: Hormonally inactive

Unilateral 90%

Majority are hormonally inactive and benign

Pelvic mass + ascites + hydrothorax: Meig's syndrome
Sertoli-Leydig Cell Tumors (Androblastomas)

Produce masculinization due to androgen production (atrophy of breasts, amenorrhea, sterility and loss of hair)

Then they progress to virilization (hirsutism) associated with male distribution of hair, hypertrophy of clitoris and voice changes

Gross: solid, golden yellow (lipid)

Histology: Tubules composed of Sertoli cells or Leyding cells
Pure Leydig cells

Reinke Crystals
Gestational Trophoblastic Disease

1. Hydatidiform Mole
2. Invasive Mole
3. Tumors: Choriocarcinoma and Placental-site trophoblastic tumor
HYDATIDIFORM MOLE

DEFINITION (HISTOLOGY):
Cystic swelling of the chorionic villi
Important to recognize because of the risk of invasive mole or Choriocarcinoma.

Can develop at any age but higher risk at the far ends of reproductive life: teens and 40-50.

COMPLETE MOLE: fertilization of an egg that has lost its chromosomes, genetic material is paternally derived
90% will have a diploid karyotype 46XX
10% fertilization of an empty egg by two sperm Fetal parts are extremely rare
2.5% risk of Choriocarcinoma
HYDATIDIFORM MOLE

PARTIAL MOLE:
Fertilization of an egg with two sperm
Final mole: triploid karyotype (69,XXY) or tetraplyod (92,XXXY)

Fetal parts more commonly present than complete mole

They are not considered to have an increased risk of Choriocarcinoma
Gross: delicate friable mass of thin-walled, translucent, cystic, grape like structures, consisting of swollen edematous (hydropic) villi.
Partial Mole
- Complete Mole: shows abnormalities that involve all or most of the villous tissue. Enlarged chorionic villi and proliferation of trophoblastic that involves the entire circumpference of the villi.

- Partial Mole: abnormalities involve only a portion of villi.

Immuno p57: p57KIP2 gene is maternally transcribed but paternally imprinted, and shows expression in maternal decidual tissue as well as cytotrophoblast and stromal cells when maternal genetic material is present

  p57: Positive in partial mole (has maternal derived tissue)
  p57: negative in complete mole
Treatment:

- Curettage
- Monitor serum concentrations of HCG (6 months to a year)
Invasive mole

• Mole that penetrates or perforates uterine wall
• Persistent elevated serum HCG
• Chemotherapy
Choriocarcinoma

Definition: Malignant neoplasm of trophoblastic cells derived from a previously normal or abnormal pregnancy.

- 50% arise in Hydatidiform moles (remember that the risk for complete moles is only 2.5%)
- 25% in previous abortions
- 22% in normal pregnancy
CHORIOCARCINOMA

HISTOLOGY:
Does not contain chorionic villi (like molar pregnancy), contains syncytiotrophoblast and cytotrophoblast.
Invades myometrium, has a rapid growth
Metastasis to lung, vagina, brain, liver and kidney.
Good news: Chemotherapy, 100% remission and high cure rate.