Gynecology Abnormal Pelvic Anatomy and Physiology:
(Effective February 2007)
pediatric, reproductive, and perimenopausal/postmenopausal
(24 - 28 %)

Cervix

• Nabothian cysts
  – result from chronic cervicitis
  – most common finding with sonography
  – discrete, round, fluid-filled anechoic cysts
• cervical polyps.
  – irregular bleeding
  – Chronic inflammation

Cervix

• leiomyomas
  – a small percentage
  – small asymptomatic
  – Large bladder or bowel obstruction
• Cervical stenosis
  – an acquired condition
  – prior instrumentation, childbirth, surgery, cancer, or irradiation.
Cervical Carcinoma
• Areas of increased echogenicity or hypoechoic areas with an irregular outline
• Vaginal discharge or bleeding
• Sonographic findings:
  – Retrovesical mass, obstruction of ureters, invasion of bladder

Vagina
• Gartner’s duct cyst.
  – most common cystic lesions of the vagina
• Vaginal adenocarcinoma and rhabdomyosarcoma appear as solid masses,
  – occasionally with areas of necrosis

Rectouterine Pouch
• rectouterine recess (posterior cul-de-sac)
• also called the pouch of Douglas
• Fluid in the cul-de-sac
  – is a normal finding in asymptomatic women and can be seen during all phases of the menstrual cycle.
• Pathologic fluid collections
  – Blood: ruptured ectopic pregnancy, hemorrhagic cyst, or pus resulting from an infection
Uterine Leiomyomas
Acquired

- Commonly called myomas or fibroids
  - most common gynecologic tumors
  - 20% to 50% of women of reproductive age.
  - most frequently seen in premenopausal women > 30 and in younger African-American women
- consist of nodules of myometrial tissue
- With atrophy and vascular compromise:
  - Liquefaction, necrosis, hemorrhage, and ultimate calcification

Leiomyomas Clinically

- cause uterine enlargement with pelvic pressure and sometimes pain.
- Menometrorrhagia irregular bleeding
- menorrhagia heavy menstrual bleeding
- can affect any portion of the uterine wall

Leiomyomas Types

- submucosal
  - deforming the endometrial cavity and causing irregular or heavy menstrual bleeding
  - Erode into endometrial cavity heavy bleeding infertility
- intramural
  - deforming the myometrium, the most common type Ψ
  - cause pressure on adjacent organs; infertility
- subserosal
  - sometimes becoming pedunculated and appearing as extraterine masses
**Adenomyosis**

- heavy painful menses
- endometrial tissue within the myometrium.
- extensive adenomyosis appears as diffuse uterine enlargement
- Hemorrhage in islands of endometrial tissue appears as small myometrial cysts.
- Linked with patients with multiple births

**Clinically**

- patient presents with heavy, painful abnormal menses
- 60% of women experience
  - abnormal uterine bleeding (hypermenorrhea),
  - prolonged/profuse uterine bleeding (menorrhagia),
  - irregular, acyclic bleeding (metrorrhagia).

**Sonographic findings**

- extensive adenomyosis:
  - diffuse uterine enlargement.
- Localized adenomyomas
  - endovaginal sonography - inhomogeneous, circumscribed areas in the myometrium, having indistinct margins and containing anechoic cavities.
Leiomyosarcoma

- 5% of uterine malignancies
- they resemble fibroids or endometrial carcinoma
- enlargement of a fibroid in the peri menopausal or postmenopausal patient raises concern about the development of a malignant sarcoma.

Uterine Calcifications

- Fibroids are the most common cause
- arcuate artery calcification
  - diabetes mellitus, hypertension, and chronic renal failure.

Pathology of the Endometrium

- $\Psi$ Menstrual phase
  - 2–3 mm
- $\Psi$ Early proliferative phase
  - 4–6 mm
- $\Psi$ Periovulatory phase
  - 6–8 mm
- $\Psi$ Secretory phase
  - 8–15 mm
**Endometrial Hyperplasia**

- Premenopausal women
  - Endometrium measures more than 14 mm (double thickness), hyperplasia is suggested.
- Postmenopausal women
  - 8 mm (double thickness) is the upper limit of normal.
- HRT (estrogen and progesterone replacement)
  - Endometrial thickness up to 15 mm during the estrogen phase

**Hysterosonogram**

- Premenopausal women
  - Midmenstrual cycle, between days 6 to 10.
- Irregular cycles,
  - Soon after the cessation of bleeding
- Postmenopausal women
  - Performed at any time

**Abnormally thick endometrium**

- Early intrauterine pregnancy
- Gestational trophoblastic disease
- Endometrial hyperplasia, secretory endometrium
- Estrogen replacement therapy
- Polyps
- Endometrial carcinoma.
**Endometrial Polyps**

- diffuse or focal endometrial thickening
- better visualized when outlined by intracavitary fluid

**Endometritis**

- often occurs in association with
  - PID, in the postpartum state, or following instrumentation invasion.
- endometrium appears prominent, irregular, or both, with a small amount of endometrial fluid.
- Can Result in hydro or pyosalpinx or TOA

**Synechiae**

- prior history of uterine curettage or spontaneous abortion.
- more easily seen in the gravid uterus.
- appear as bridging bands of tissue that distort the cavity or as thin, undulating membranes
**Endometrial Carcinoma**

- Most endometrial malignancies are adenocarcinomas
  - occurring in perimenopausal and postmenopausal patients with irregular bleeding.
- Enlargement with lobular contour of the uterus and mixed echogenicity are correlated with more advanced stages of the disease.

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**Endometrial Carcinoma**

- Associated with estrogen stimulation
- Postmenopausal bleeding
- Enlarged uterus with irregular areas of low level echoes
- Thickened endometrium
  - thickness greater than 4 to 5 mm
- Hydrometra or hematometra

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**Tamoxifen Ψ**

- Nonsteroidal antiestrogen compound
  - used for adjuvant therapy in premenopausal and postmenopausal women with breast cancer.
- Increased risk of endometrial carcinoma
- Increased risk of endometrial hyperplasia and polyps.
IUD

• increased risk for
  – ectopic pregnancy
  – PID
  – TOA

• IUDs are always external to fetal membranes

• Approximately 50% of pregnancies abort on extraction of the IUD.
Ovaries

Fallopian tubes
Other adnexal structures

Cul-de-sac

Vascular/Doppler
Supporting structures

Menstrual cycle

Infertility
Causes
Infertility
ART (assisted reproductive technology)

Laboratory evaluation/ Drug effects

Gynecology-related studies
Extra-pelvic pathology associated with gynecology