Uterine Pathology

Uterine Anomalies

Congenital anomalies
(See section on Mullerian duct anomalies)

DES exposure:
- “T”- shaped uterus
- Constricting bands within the uterine cavity
- Hypoplastic uterus
- Intrauterine polypoid defects and synechiae. Synechiae are adhesions found within the uterine cavity.

Acquired anomalies
Asherman’s syndrome: obliteration of the endometrial cavity as a result of excessive or traumatic uterine instrumentation. Endometrial tissue is replaced with collagen resulting in development of uterine adhesions or synechiae.
Clinical presentation: amenorrhea or hypomenorrhea; infertility; recurrent spontaneous abortions.

Benign Disorders of the Uterus

Pyometra and hematometra: pus and/or blood filling the uterine cavity. Conditions are typically associated with outflow obstruction of the genital tract such as cervical or vaginal atresia, acquired cervical stenosis, imperforate hymen; and transverse vaginal septum.
Clinical presentation: primary amenorrhea; dysmenorrhea; endometriosis, infertility.

Endometritis: an inflammatory reaction of the endometrium. May be acute or chronic. Most common causes include: STD infections; instrumentation procedures that introduce organisms into the endometrial cavity.

Others Include:
- Teratoma
- Lymphangioma
- Polypoid adenomas
Leiomyomas (fibroids, myomas)

Incidence: Frequent and commonly appearing benign uterine tumor of muscle cell origin. In one large study, 75% of women had some degree of myomatous changes in the uterus; only 20-30% have clinically detectable myomas; most are asymptomatic. More common in:
- Black women: three times higher than in Caucasians
- Older women: incidence increases as a woman moves through reproductive years.
- Peri-menopausal status
- Obese women.

Pathology: benign muscle tumor. Estrogens and progesterone stimulate myomatous tissue proliferation. Gross appearance is that of a white, swirling compact cellular tumor that creates a pseudocapsule by its expansion into the myometrium. Myomas may occupy any position within the uterus or Mullerian ductal system and their development will distort the uterine shape accordingly.

Clinical signs and symptoms:
Four major presenting symptoms:
- Abnormal uterine bleeding
  Heavy periods
  Alteration in normal menstrual flow
- Pelvic mass: palpable on pelvic exam
- Sensations of pressure in the pelvis
  Frequency of urination
  Dyspareunia (painful intercourse)
- Pain: may be caused by torsion or degeneration of a fibroid.

Clinical complications may include:
- Torsion: the twisting of a pedunculated myoma on its pedicle. Results in interruption of blood flow to the mass and typically causes sudden onset, acute pelvic pain with tenderness localized to the myoma. If the torsion is not reduced, ischemia of the myoma results.
- Prolapse: extrusion of a submucosal myoma through the vagina.
- Degeneration: inadequate perfusion to a fibroid can cause chronic ischemic changes that result in breakdown of the tissue (necrosis). This degeneration of the mass typically results in liquefaction of the central portion of the fibroid. Calcific changes can also occur as calcium salts precipitate within the tumor. Ultrasound changes may reflect these alterations in gross appearance of the fibroid.
- Pregnancy related complications: during pregnancy, myomas can change due to the altered hormonal status. About 20% increase in size; 20% decrease in size and 60% remain unchanged.
• **Dystocia**: difficult vaginal delivery. Malpresentation of the fetus may occur if the myoma lies in the lower uterine segment. Lower uterine segment and/or cervical myomas may prevent normal cervical dilatation.

• **Placental abruption**: if a portion of the placenta is implanted over a submucous myoma, there may be defective implantation resulting in an increased risk of premature separation of the placenta from the uterine wall (placental abruption).

**Gross pathologic appearances**: Myomas are usually multiple, discrete, and spherical, or irregularly lobulated. Although myomas have a false capsular covering, they are clearly demarcated from the surrounding myometrium and can be easily and cleanly enucleated from the surrounding tissue. On gross examination in transverse section, they are buff-colored, rounded, smooth, and usually firm. Generally they are lighter in color than the myometrium. When a fresh specimen is sectioned, multiple, whorling tissue planes can be identified.

**Location of fibroids**. Fibroids can occur anywhere in the uterus, cervix, or broad ligament but are most commonly found in the uterine corpus. Description of the location of a fibroid is based on its relationship to uterine layer and anatomical part.

- **P** – pedunculated: arising from a stalk
- **I** – intramural: interstitial location within the myometrium
- **M** – submucosal: lying directly beneath the endometrium and frequently projecting into the uterine cavity; most commonly produces symptoms, i.e., bleeding
- **S** – subserous: (subserosal) lying beneath the outer peritoneal surface of the uterus
- **L** – interligamentous: occurring within the broad ligament
- **C** – cervical

**Exophytic**: growing out of and away from the uterus.
Sonographic appearances: specific sonographic appearance depends on the size of the fibroid and type of degeneration present. Most common sonographic findings include:

- Well-circumscribed, hypoechoic masses
- Increased attenuation within the mass
- Calcification within or surrounding the mass
- Distortion of normal uterine contour
- Extrinsic compression of the posterior bladder wall.

Adenomyosis

Incidence: With routine histological examination, adenomyosis is found in approximately 5-10% of postmenopausal women and 15% of women under the age of 40. It is associated with uterine fibroids 50% of the time and with endometriosis <2% of the time.

Pathology: a benign disease of the uterus characterized by the presence of ectopic endometrial glands and stroma located within the myometrium.

Clinical signs and symptoms: vague and non-specific but classic symptoms include:

- Secondary dysmenorrhea (15-30% of cases) in patients 40-50 yrs old.
- Menorrhagia (40-50%)
- Midline dyspareunia (in advanced cases)

Gross pathologic appearances: adenomyosis may present as either diffuse or focal involvement of the myometrium. Most commonly, the uterus is grossly enlarged and somewhat globular with diffuse involvement of both anterior and posterior uterine walls. There is usually greater involvement of the posterior wall.

Sonographic appearances: (may include, however, adenomyosis is a clinical/biopsy diagnosis)

- Enlarged uterus with normal contours
- Anterior displacement of the endometrial cavity.
- Focal areas of decreased echogenicity within the myometrium, possibly with small endometrial cysts.
- Thickening of posterior myometrium.
Uterine Neoplasia

Endometrial Hyperplasia
Pathology: Excessive proliferation of endometrial glandular tissue. There are two histologic types; each may produce symptoms clinically indistinguishable from endometrial carcinoma. Some types of endometrial hyperplasia are considered “pre-malignant”. Because of the similarity in clinical presentation and of the potential increased risk of endometrial carcinoma, careful management of these patients is necessary. D&C with histologic evaluation of the tissue obtained is important.

Etiology: Endometrial hyperplasia is associated with hyperestrogenic states: Common causes include:
- Unopposed estrogen administration (HRT)
- Estrogen producing tumors
- Persistent anovulatory cycles
- Polycystic ovarian disease (PCO)

Clinical signs and symptoms:
- Vaginal bleeding: inter-menstrual, hypermenorrhea or postmenopausal
- Hyperstrogenism: (conditions with possible alterations in estrogen metabolism such as:
  - Ovarian granulosa cell tumor
  - Polycystic ovarian disease
  - Obesity
  - Late menopause
  - Hormone replacement therapy (especially unopposed exogenous estrogen)
  - Tamoxifen use (used for treatment of breast cancer)

Gross pathologic appearances: increased thickens of endometrial tissue, sometimes with cystic changes producing a classic “Swiss-cheese” appearance to the endometrium.

Sonographic appearances:
- Increased thickness of the endometrial stripe
- Smooth, well defined borders
- Homogenous appearance of the endometrium; may be cystic changes present.
- Suspected in pre-menopausal women if EC >14mm
**Uterine (endometrial) polyps**

**Incidence:** common in the endometrial cavity particularly at ages 29-59; greatest incidence occurs after age 50.

**Pathology:** a mass of endometrial tissue that projects out or away from the surface of the endometrium. They consist of an excessive localized growth of endometrial tissue with a stromal core and epithelial and mucosal tissue surrounding it.
- May be single or multiple and range in size from small, 1mm excrescences to masses that fill or distend the uterine cavity.
- Most commonly arise in the fundal region
- May undergo malignant change

**Clinical signs and symptoms:**
- Often asymptomatic
- Vaginal bleeding; either inter-menstrual flow or heavy periods (menorrhagia).
- Infertility
- Occasionally cause postmenopausal bleeding
- Usually discovered incidentally during D&C

**Gross pathologic appearances:** Smooth, red or brown ovoid body with a velvety texture.

**Sonographic appearances:**
- Non-specific thickened endometrium, usually focal but occasionally diffuse
- Discrete mass in endometrium, possibly with a vascular stalk demonstrated with color Doppler
- May be indistinguishable from endometrial hyperplasia
- Hysterosonography is ideal for demonstrating polyp size and location

**Endometrial Carcinoma**

**Incidence:** Endometrial carcinoma is the most common type of gynecologic malignancy. It usually occurs in women 60 - 70 years of age.

**Pathology:** There are three histologic types of uterine cancer:
- Adenocarcinoma **MOST COMMON**
- Adenoacanthoma
- Adenosquamous carcinoma

**Risk factors include:**
- Obesity
- Hypertension
- Diabetes mellitus
- Strong familial history of uterine cancer
**Natural history:** Initially the tumor mass grows into the uterine cavity. Myometrial invasion is the first indication of continued spread of the disease. Without treatment, the malignancy may spread to the cervix, adnexa, fallopian tubes and ovaries. Distant metastases may occur if the pelvic lymphatic system is infiltrated.

**Clinical Signs:**
- Vaginal bleeding; post-menopausal
- Hypermenorrhea, intermenstrual flow in patients still having periods
- Pain as the result of uterine distention

**Sonographic Findings:**
- Alteration in size, shape and sonographic texture of the uterine parenchyma
- Increased uterine size
- Thickening of endometrial echoes ( >5 mm) especially in a post-menopausal woman (varies with patient's hormone status)
- Fluid in the endometrial cavity
References:

