Benign Diseases of the Cervix

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EMBRYOLOGY

• By 5 weeks’ gestational age, the wolffian (mesonephric) and müllerian (paramesonephric) ducts have formed from intermediate mesoderm.
• In the absence of testosterone and müllerian inhibitory substance, the mesonephric ducts regress and the paramesonephric ducts continue to form the female reproductive structures.
• With fusion of the distal portions of the paramesonephric ducts give rise to the uterine fundus, the cervix, and the upper vagina.
• In a female fetus, the wolffian duct disappears except for nonfunctional vestiges.

Figure 1. Scheme showing the embryological development and sequence (1 to 4) of Müllerian ducts. Fusion (5), (6) indicates the ovaries. Number 7 demonstrates the formation of the uterine body after fusion. U1, uterine body; T, fallopian tube; C, cervical third of the vagina; Cb, distal third.
GROSS ANATOMY

- The cervix measures 2.5-3 cm in diameter and 3-5 cm in length, it is angulated slightly downward and backward. Inferiorly, the cervix projects into the vagina as the portio vaginalis, the opening into the vagina (external os).
- The external os is usually small and round in nulliparous women but can be seen as a transverse slit in those who have had cervical dilation during labor.
- The anterior and posterior fornices delimit the portio (exocervix). The cervical canal measures 3 mm wide and contains longitudinal ridges. The opening of the cervical canal into the uterus is called the internal cervical os.
- The area between the endocervical and endometrial cavity is called the isthmus and forms lower segment.
The cervix of a woman who has not given birth (nulliparous)  The cervix of a woman who has given birth (parous)

**VASCULAR SUPPLY**

- The lymphatic drainage of the cervix is first to the parametrial nodes, then to the obturator, internal iliac, and external iliac nodes. Secondary drainage is to the presacral, common iliac, and para-aortic lymph nodes.

- The innervation of the cervix is from the Frankenhauser plexus, a terminal part of the presacral plexus. The nerves enter the lower uterine segment and upper cervix on either sides.

- The major blood supply is from the descending branch of the uterine artery. Also contributing is the cervical branch of the vaginal artery. The venous return mirrors the arterial blood supply.
MICROSCOPIC ANATOMY

- The cervical stroma is composed of an admixture of fibrous, muscular (15%), and elastic tissue.
- The vaginal portion of the cervix is covered by non-keratinizing stratified squamous epithelium becomes continuous with the vaginal epithelium.
- Glycogen stores respond to hormonal changes in estrogen and progesterone.
- The mucosa of the cervical canal (endocervix) is composed of a single layer of mucin-secreting columnar epithelium, with the underlying glandular crypts.

CONGENITAL ANOMALIES

- Congenital anomalies involving the cervix reflect only the lower part of the spectrum of congenital anomalies involving the müllerian system.
- The cervix has 3 types of anomalies: fusion abnormalities, congenital absence, and changes due to in utero exposure to diethylstilbestrol (DES) and other nonsteroidal estrogens.
- Müllerian congenital abnormalities are frequently associated with urinary tract anomalies because of associated mesometanephric duct developmental defects (25%).
SQUAMOCOLUMNAR JUNCTION

- The squamocolumnar junction is the border between the squamous epithelium of the ectocervix and the columnar epithelium of the endocervix.

- Trauma, chronic irritation, and cervical infections play a role in the development and maturation of the squamous epithelium of the cervix.
TRANSFORMATION ZONE

- The transformation zone is a dynamic area, on the ectocervix, by definition, is the area between the original squamocolumnar junction and the current squamocolumnar junction.

- The transformation zone originally was columnar epithelium and through a process of squamous metaplasia is now squamous epithelium.

- Squamous metaplasia occurs continuously; however, this related to Local hormonal changes, as reflected by vaginal pH, influence the process of ECTOPY /ECTROPION
In postmenopausal women, the squamo-columnar junction frequently is located within the cervical canal.

Colposcopic visualization of the squamo-columnar junction is frequently unsatisfactory because of the inability to visualize it.

More than 80% of squamous cell cancers arise at the transformation zone (*Cancer bearing area*).

**BENIGN TUMOURS**

- Endocervical polyps
- Leiomyoma,
- Microglandular hyperplasia,
- Squamous papilloma,
- Papillary adenofibroma
Endocervical polyps

Commonly arise from endocervix

1. Mucous polyp
   or inflammatory polyp

* Symptoms: symptomless or contact bleeding.

* Sign: smooth, red or purple, fingerlike projections from the cervical canal

* Treatment: Removal of the polyp and cautery of base by electrocautery or with a laser.
Fibroid polyp

These benign neoplasms may originate in the cervix and 8% of all uterine smooth muscle tumors. They are similar to tumors in the fundus, in the cervix, they usually are small, i.e., 5-10 mm in diameter. Symptoms depend on size and location. Microscopically, leiomyomas resemble the typical smooth muscle tumor found in the uterine corpus. Treatment is required only for those who are symptomatic. The cervical leiomyoma is usually part of the spectrum of uterine smooth muscle tumors.

Cervical Leiomyoma

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Cervical Leiomyoma

**Infection of endocervix**

1) **Acute Cervicitis**

**Aet:**
1) Infected laceration
2) Gonococal OR Clamydial

**Symptoms:**
1. Mucopurulent discharge
2. Dyspareunia, pelvic pain
3. Urinary symptoms

**Sings:**
1. Red swollen cervix.
2. Pus discharge
3. Tenderness on moving cervix

**Microscopic:** Epithelial necrosis + neutrophilic infiltration

**Treatment:** Antibiotics

**Complication:** Chronic cervicitis, risk of PID

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**Infection of endocervix**

1) **Acute Cervicitis**
2) Chronic Cervicitis

- Chronic Cervicitis is most often a sequale of acute infection or starts as chronic infection.

- Cervicitis is very common, affecting more than half of all women at some point during their adult lives.

- Multiple sexual partners, and a history of sexually transmitted disease, cervical lacerations, increase a woman’s risk of chronic cervicitis.
Symptoms:
- Vaginal discharge, yellow mucopurulent discharge
- Abnormal vaginal bleeding, contact bleeding
- Pelvic pressure or heaviness
- Dyspareunia, pelvic pain,
- Urinary symptoms

Signs: A speculum examination reveals
- Redness / discharge.
- Mucopolyps
- Chronic hypertrophic cervicitis
- Ectopy, Nabothian follicles
- Patchy, reddening (trichomoniasis)
- White plaques (candidiasis)

Tests:
- Tests for gonorrhea or Chlamydia may be positive.
- A wet mount insepetion of the discharge may show candidiasis, Trichomonas, or bacterial vaginosis.
- A Pap smear show evidence of inflammation or infection.

Treatment
- Infections causes are treated with (antibiotics).
- Cryosurgery, electrocauterization, and laser therapy are treatment options that may be considered with recurrent or persistent chronic cervicitis
# Antibiotic Regimens

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Primary Treatment</th>
<th>Alternative Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C. trachomatis</em></td>
<td>Antimicrobial PO</td>
<td>Erythromycin base 500 mg PO qid for 7 d</td>
</tr>
<tr>
<td></td>
<td>Doxycycline 100 mg bid for 7 d</td>
<td>or Erythromycin ethylsuccinate 800 mg qid for 7 d</td>
</tr>
<tr>
<td><em>N. gonorrhoeae</em></td>
<td>Cefixime 400 mg PO</td>
<td>Spectinomycin IM</td>
</tr>
<tr>
<td></td>
<td>Ceftriaxone 125 mg IM</td>
<td>or Ceftriaxone 500 mg IM</td>
</tr>
<tr>
<td></td>
<td>Antimicrobial PO</td>
<td>or Cefotaxime 500 mg IM</td>
</tr>
<tr>
<td></td>
<td>Doxycycline 100 mg bid for 7 d</td>
<td>or Cefotaxim IM</td>
</tr>
<tr>
<td>Twagiaaks</td>
<td>Metronidazole</td>
<td>or Cefotaxim + probenecid PO</td>
</tr>
<tr>
<td></td>
<td>or Metronidazole 500 mg bid for 7 d</td>
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</tbody>
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**Cervical Electrocautery and Laser Ablation**

![Image of cervical electrocautery and laser ablation]
INFECTIONS INVOLVING THE PORTIO OF THE CERVIX (ECTOCERVIX)

1- The herpes virus (genital herpes) and human papilloma virus (genital warts) are two other STDs that can cause cervicitis.
2- Bacteria, such as staphylococcus, streptococcus,
3- Trichomonal cercicitis
4- Tuberculous cervicitis
5- Treponema pallidum

Human Papilloma Virus (HPV).

- The typical exophytic warts that present on the vulva, vagina, and cervix are type 6 or type 11.
- Types 16, 18, 31, 33, and 35 are more commonly associated with flat warts and linked to cervical intraepithelial neoplasia or CIN and then invasive carcinoma.
- Treatment by topical podophylline or destruction with LASER
CERVICAL INFECTION WITH (HPV)

Gardasil® is a quadrivalent HPV recombinant vaccine containing activity against HPV types 6, 11, 16, and 18. The vaccine is indicated for prevention of HPV-associated dysplasias and neoplasias, including cervical cancer, genital warts. (FDA approval in September 2007).

Cervarix® is the second HPV vaccine and is also a recombinant formulation. This vaccine is designed to create immunity against the HPV subtypes 16 and 18, which cause 70% of cervical cancer. (FDA approval in September 2009).
NON-INFECTIONOUS CERVICITIS

- This includes chemical irritation (eg, deodorants, douching), local trauma from foreign bodies (eg, tampons, pessaries, IUDs), surgical intervention.
- Clinically, the cervix is swollen, erythematous, and friable, and an associated with postcoital bleeding. The epithelium may be ulcerated.
- Microscopically, marked inflammatory reaction with varying amounts of granulation tissue and stromal fibrosis.

OTHER BENIGN CONDITIONS

I- Nabothian follicles
II- Cervical ectropion
II-Cervical laceration
III- Endometriosis
IV- Mesonephric duct remnants
NABOTHIAN FOLLICLES

- Mucus filled cysts visible on the ectocervix
- Are of no pathological significance
- Sometimes may be up to 10 mm.
- Usually need no treatment unless associated with chronic cervicitis can be cauterized
CERVICAL ECTROPION

- Old Misnomer (Erosion)
- Pouting of the columnar epithelium into the vaginal portion
- In pregnancy or when the patient is on the pill
- Patient may complain of vaginal discharge
- Rule out infection
- Cautery has no role in treatment unless associated with infection
CERVICAL ENDOMETRIOSIS

- Uncommon sites include ectocervix, vagina and vulva. Typical appearance is bluish nodules.
- Pelvic examination reveals evidence of pelvic endometriosis (tenderness, nodularity, fixed RVF uterus......)
- Histologic evaluation is necessary for diagnosis.
THANK YOU

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