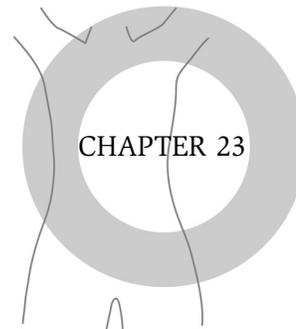


# *Atrophic Vaginitis*



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## **I. Atrophic vaginitis explained.**

### **A. Statistics.**

1. Statistics indicate that 45 million women are menopausal and that this number is growing as baby boomers reach menopause and beyond.
2. Three years after the onset of menopause, almost 50% of women will experience vaginal dryness.

### **B. Some facts.**

1. Symptoms of atrophic vaginitis are commonly associated with menopause as estrogen levels drop causing thinning of the vulvovaginal epithelium.
2. Urogenital atrophy is the most inevitable consequence of menopause.
3. Atrophic changes are reversible with the estrogen therapy.
4. Conditions associated with low estrogen are summarized in Box 23.1.

## **II. Pathophysiology.**

- A.** Urogenital changes occur during perimenopause, often well in advance of cessation of menses. Vaginal mucosal tissues contain many estrogen receptors which are commonly affected by reductions in estrogen.
- B.** As the wall of the vagina become thin, there is a decrease in the

### *Causes of Urogenital Atrophy*

**BOX  
23.1**

#### **Antiestrogen medications**

- Lupron
- Clomid
- Provera
- Synarel
- Nolvadex
- Danocrine

**Postpartum** Absence of placental estrogen

**Breastfeeding** Antagonistic action of prolactin on estrogen

**Premenopausal** Premature ovarian failure

#### **Extraneous causes**

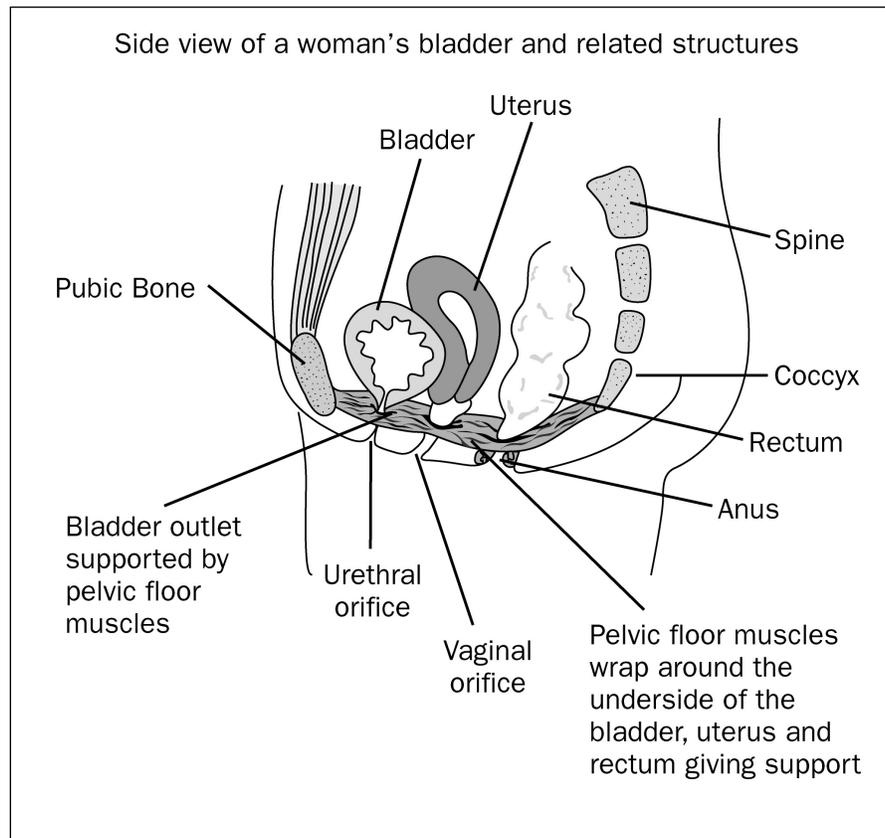
- Surgery (oophorectomy)
- Chemotherapy
- Radiation
- Menopause

#### **Other milder forms**

- Heavy smoking (reduced estrogen absorption)
- Reduced sexual activity
- Inadequate systemic estrogen replacement therapy

support for the pelvic organs and the muscles that are adjacent to it.

- C. The drop in estrogen causes a decrease in glycogen reducing lactobacilli which leads to an increase in vaginal pH (from acid to alkaline). This often leads to overgrowth of various pathogenic bacteria such as *Gardnerella vaginalis*, mycoplasma, streptococci, and others (see Figure 23.1).
- D. Reduced estrogen may also result in a reduced blood flow, loss of collagen, elasticity, and muscle tone. Thinning of the urogenital epithelium or atrophism leads to various symptoms associated with atrophic vaginitis including dyspareunia and pruritus.
- E. Similar tissue changes may also occur in the urinary tract contributing to dysuria, incontinence, urinary frequency, and increased risk of urinary tract infections.
- F. Symptoms and signs of genitourinary atrophy may develop slowly, over many months or years, or may have a more rapid onset.
- G. Symptoms vary and are affected by many factors such as an individual's estrogen levels and response to these levels.



**Figure 23.1** Side view of bladder and related structures.

### III. Indications for evaluation.

- A. The complaint of urogenital symptoms is an indication for a thorough work-up.

### IV. Assessment.

- A. A history of symptoms may include the following:
1. Vulvovaginal symptoms.
    - a. Vulvar dryness, lack of lubrication, pruritus, irritation, and vaginal discharge.
  2. Vaginal bleeding.
    - a. Due to tissue thinning and friability, vaginal spotting is of-



**V. Medical, surgical, and family history, lifestyle, medications including use of AV (vaginal estrogen) over-the-counter preparations. (Box 23.2 summarizes the characteristic symptoms of AV.)**

**A. External genitalia exam.**

1. Note thinning of hair and tissues, pallor, erythema, lesions, fissures, loss of architectural landmarks, introital shrinkage, vulvar atrophy, pallor, erythema (diffuse versus focal), and tenderness.
2. Vulvar dryness and/or positive “sticky glove sign,” which occurs when the examiner’s glove adheres temporarily and is thought to be diagnostic for atrophic vaginitis.
3. Urethral caruncle.
  - a. Small friable polyp of urethral mucosa which protrudes from the inferior border of the urethral meatus (Figure 23.2).
  - b. Associated with symptoms of dysuria, frequency, and may be the cause of vaginal bleeding in the menopausal woman.

**B. Vaginal exam.**

1. Cystocele, rectocele, and grade (see Unit 7, chapter 24).
2. Introital laxity, tension, loss of tone with Kegels, or Valsalva maneuver.
3. Tenderness with palpation or during speculum insertion and/or exam.
4. Note vaginal pallor, erythema, loss of rugae (flattening), lesions, shortening of vagina, loss of elasticity, tenderness.
5. Discharge; which may range from scant to copious, be variable in quality ranging from thin white to thick, yellow/green and malodorous.
6. Abnormal discharge may mimic trichomoniasis or other STI associated discharge.
7. Cervix.
  - a. Erythema, lesions, friability, bleeding, tenderness, flattening and shortening, stenosis of cervical os (small).

**C. Bimanual exam.**

1. Uterus.
  - a. Size, shape especially asymmetry (associated with fibroids that usually shrink in menopause), diffuse enlargement associated with pregnancy or pathology such as hyperplasia, tenderness, sometimes fibroids, etc.
2. Pelvic floor (see chapter 24).

### *Summary of Characteristics of Urogenital Atrophy*

**BOX  
23.2****Labia (majora and minora)**

- Less prominent, flattened
- Fusion of labia minora
- Lax and wrinkled (lack of subcutaneous fat)
- Thinning cell layer
- Prominent sebaceous glands
- Positive sticky glove sign
- Easily traumatized (fissures, excoriations)
- Irritation due to continuous use of pad for urinary incontinence

**Clitoris**

- Less prominent
- Retracts beneath the prepuce
- Slight atrophy

**Subcutaneous fat**

- Diminished

**Pubic hair**

- **Thins**
- **Less coarse**

**Vaginal wall epithelium**

- Thin (a few layers thick)
- Friable
- Shiny
- Small ulcerations
- Patches of granulation tissue
- Petechial spots (resemble trichomoniasis)
- Fissures
- Ecchymotic areas from exposed capillaries
- Loss of rugae
- Decreased vascularity (pale)
- Less lubrication (dryness)
- Loss of distensibility, elasticity
- Decreased discharge

**Vagina**

- Introital stenosis (< two fingers)
- Shortened
- Shrinkage of fornices
- Less elasticity
- Possible cystocele, rectocele or pelvic prolapse

**Box 23.2** (*continued*)**Discharge**

- Variable
- Watery to thick and cloudy
- May be serosanguineous from friable surfaces

**Maturation Index**

- Preponderance of parabasal cells

**Cervix**

- Shrinks, flattens into vaginal wall
- Os becomes tiny
- Squamo-columnar junction recedes up the cervical canal
- Atrophied crypts and ducts in canal

**Uterus**

- Smaller
- Endometrium thins—less glandular, atrophic
- Uterine stripe < 4mm
- Fibroids may shrink

**Perineum**

- Minor laceration at the posterior fourchette

**Urethra**

- Caruncle—red, berry-type protrusion
- Atrophy
- Polyps
- Prolapse/eversion of urethral mucosa

**Pelvic Floor**

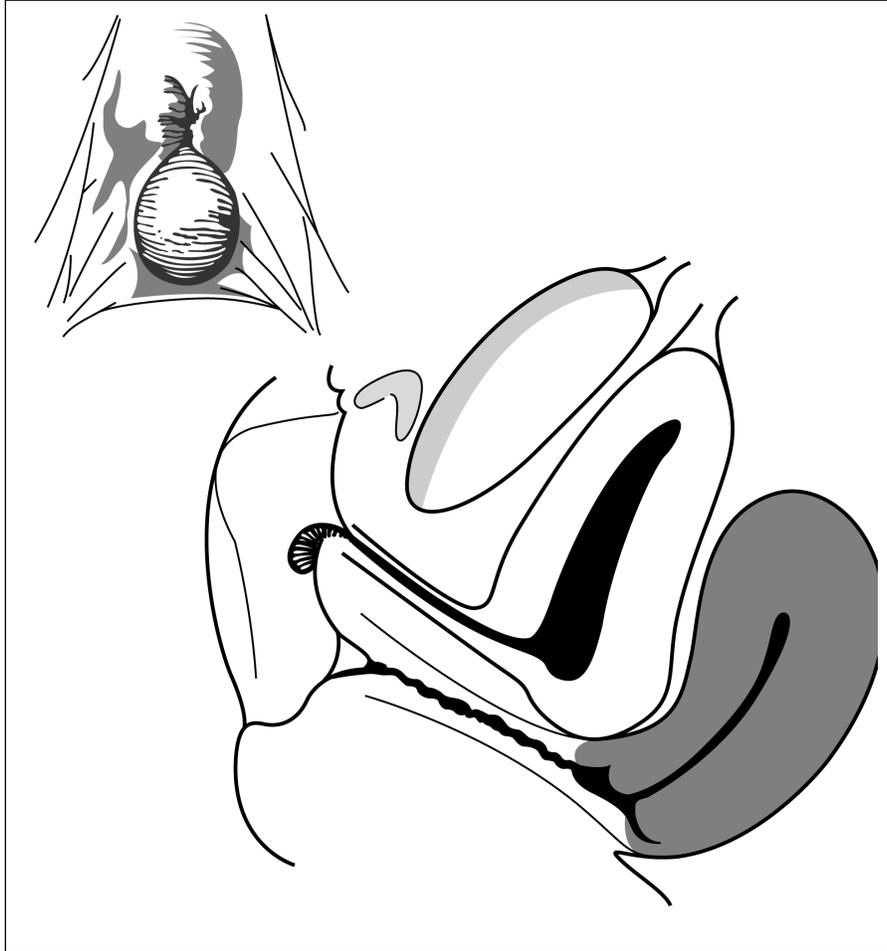
- Muscle tone diminishes
- Cystocele
- Rectocele

**Ligaments and connective tissue**

- Lose strength and tone

**Bladder mucosa and urethra**

- Decreased tone



**Figure 23.2** Small polyp of urethral mucosa in sagittal section and shown protruding from the inferior border of the urethral meatus.

- a. Note cystocele, rectocele, introital tone with Kegels, and Valsalva maneuver.
3. Ovaries.
  - a. In menopause, ovaries should not be palpable.
  - b. If ovaries are palpable, a work-up is indicated.

**VI. Diagnostic testing and differential diagnosis.**

- A.** Differential considerations (Table 23.1).

**Table 23.1 Differential Considerations in the Diagnosis of Atrophic Vaginitis**

Differential	pH	KOH	Microscopy
Atrophic vaginitis	≥ 5.0	Negative	Few LB, WBCs variable, Immature Epithelial Cells (ECs)
Trichomoniasis	≥ 5.0	Negative	Trich, WBCs, Immature ECs, Few LB
BV	≥ 4.7	Positive	Clue cells, few WBCs, few LB
Intermediate Flora	± normal	± positive	Grainy epithelial cells, reduced LB

### Factors That Affect Vaginal pH

**BOX  
23.3**

- Menses (pH 7.2)
- Semen (pH > 7)
- Cervical mucus, because it is alkaline
- Lubricant from speculum
- Intravaginal medications
- Lubricating jelly
- Tap water

1. Vaginal pH.
  - a. Atrophic vaginitis is associated with a significantly elevated vaginal pH, usually above 5.
    - (1) A normal vaginal pH (4.0 to 4.5) indicates normal circulating estrogen levels and rules out atrophic vaginitis.
    - (2) A high pH is due to the lack of lactobacilli which make lactic acid.
  - b. Many factors can alter the pH results (Box 23.3).
2. Amine testing with potassium hydroxide (KOH).
  - a. If negative, BV (bacterial vaginosis) is unlikely, and atrophic vaginitis is possible, especially if vaginal pH is also elevated.
3. Vaginal microscopy (see chapter 10).
  - a. Note reduced or absent lactobacilli (LB).
  - b. Note immature epithelial cells indicating low estrogen.

- c. Rule out trichomoniasis. If microscopy is equivocal for the identification of trichomoniasis, a trich culture should be done. Trichomoniasis may be asymptomatic for decades reactivating in perimenopause or postmenopause. The clinical presentation may mimic that of atrophic vaginitis.
  - d. Rule out genital herpes with herpes select serology IGG type 2 testing. HSV 2 (herpes simplex virus) may be latent and/or asymptomatic for decades, activating in perimenopause or menopause. Genital HSV 2 is very common, and prevalence increases with age, affecting 1 out of 3 women over 30 years of age. Adding to the diagnostic challenge most clinical presentations are atypical, further evading easy diagnosis.
  - e. If WBCs (white blood cells), this is most likely related to atrophic effects resulting in secondary vaginal infection, which will resolve when local estrogen is administered and maintained. Initial treatment daily for 2 to 6 weeks, then may be tapered to 2 to 3 times a week depending on patient response. If symptoms recur, frequency of treatment may need to be increased to daily, then gradually decreased again after 2 to 6 weeks of daily treatment.
  - f. STIs must be ruled out (chapter 21), especially if WBCs are noted. STIs are increasing in older adults, so to assess risk, consider clinical assessment (history and exam) and age of sexual partners.
4. The “Maturation Index.”
- a. The presence of estrogen promotes the maturation of the cells lining the vaginal mucosa.
  - b. The “Maturation Index” monitors the differentiation of the immature squamous cells toward their most evolved forms, from parabasal to intermediate cells, to the mature superficial cells, each representing a cellular layer (Figure 23.3).
  - c. Sample is obtained by scraping the lateral wall of the vagina.
  - d. The index represents the relative number of each kind of cell per hundred cells counted. (See Box 23.4, which compares the type of cell in each cell layer.)
  - e. Expressed in a ratio of parabasal to intermediate to superficial cells and read from “left to right.”
    - (1) 0:0:100—superficial cells—well estrogenized because there are all superficial cells present.

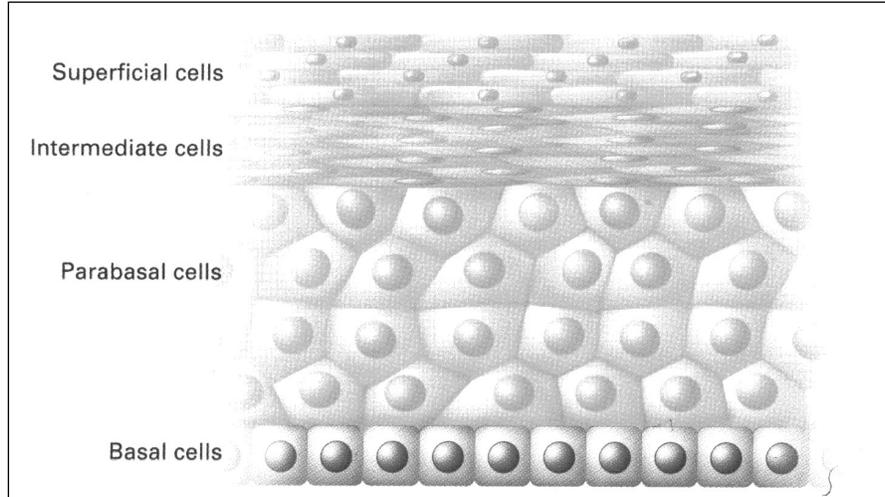


Figure 23.3 Layers of the vaginal epithelium.

*Comparison of the Squamous Epithelial Cells of the Vagina*

**BOX  
23.4**

Parabasal	<p>Lower layer</p> <p>Smaller, round cells with large nuclei comprising 50% to 75% of the total cell size</p> <p>Sparse cytoplasm</p>
Intermediate	<p>Middle layer</p> <p>Smaller nuclei with round cell</p>
Superficial	<p>Surface layer</p> <p>Small nuclei with rectangular cell membrane</p> <p>Nucleus comprises only 10% to 20% of the cell</p> <p>Abundant cytoplasm</p>

- (2) 0:100:0—intermediate cell atrophy—minimal atrophic vaginitis.
  - (3) 100:0:0—parabasal cell atrophy—marked atrophic vaginitis because there are no mature epithelial cells, only parabasal cells.
  - (4) Note: The presence of any parabasal cells on a wet mount may be considered documentation of atrophic vaginitis.
5. Endometrial biopsy, colposcopy (based on Pap and HPV results) and possibly an ultrasound should be considered for abnormal vaginal bleeding.

#### VII. Treatment considerations.

- A. Local estrogen is preferred to systemic estrogen as it is more effective for the treatment of atrophic vaginitis and is thought to be safer due to lower systemic absorption compared to oral administration.
- B. Systemic estrogen is not recommended for treatment of atrophic symptoms and if it is given for VMS (vasomotor symptoms) additional local estrogen may be necessary to adequately treat atrophic symptoms.
- C. Only the intravaginal estrogen “FemRing” is effective for the treatment of both hot flashes and atrophic vaginitis.
- D. Local estrogen therapy starts with daily intravaginal treatment for 2 to 4 weeks then may be tapered to three times weekly then twice a week as needed.
- E. Applying a small pea-sized amount of local estrogen cream to the introital area may relieve dyspareunia. Daily application is recommended initially, then three or two times weekly as needed.
- F. Less effective than estrogen, non-prescription over-the-counter (OTC) lubricants may help relieve dyspareunia and vaginal dryness.
- G. If BV is present with atrophic vaginitis, either local estrogen alone may be used, or BV may be treated followed by treatment with local estrogen. If estrogen has been stopped and BV recurs, local estrogen should be restarted and used for a longer term to prevent BV. Estrogen supports the regrowth and maintenance of lactobacilli, which is thought to be protective against recurrent BV.
- H. If vulvar skin lesions do not resolve within 6 weeks, a skin biopsy should be considered (see chapter 32).

#### VIII. Follow-up.

- A. Follow-up visits may range from 2 weeks to 3 months based on the patient’s problems, response to therapy, and clinician/patient preference.