

**Female reproductive system: Clinical pathologic correlation**

Introduction

- The female reproductive system is organized anatomically and follows the physical examination.

Organ	Presentation	Disease
<b>Vulva</b>	Patches & plaques	Hyperplasia (LSC <sup>1</sup> ), lichen sclerosis, vulvar HSIL <sup>2</sup> , dermatitides, extramammary Paget disease
	Mass	SCC <sup>3</sup>
<b>Vagina</b>	Mass	Bartholin cyst, hidradenoma, neoplasm
	Discharge	Gonorrhea, chlamydia, candidiasis, trichomonas, Gardnerella
<b>Cervix</b>	Screening	Cytology, HPV testing
	Bleeding	Carcinoma
<b>Uterus</b>	Bleeding	DUB <sup>4</sup> , hyperplasia, carcinoma
<b>Ovary &amp; tube</b>	Infertility	PCOS <sup>5</sup> , chronic PID <sup>6</sup> , endometriosis
<b>General</b>	Acute pelvic pain	Acute PID, ectopic pregnancy, torsion, rupture ovarian cyst, appendicitis, endometriosis

1. Lichen simplex chronicus, 2. High grade squamous intraepithelial lesion, 3. Squamous cell carcinoma, 4. Dysfunctional uterine bleeding, 5. Polycystic ovary syndrome, 6. Pelvic inflammatory disease

- **Vulva and vagina:**
  - o Vulva and vagina have 3 different types of squamous epithelium.
    - The labia majora is skin, which means that it has subcutaneous fat and adnexal structures like sweat glands, apocrine glands and hair. Any of the skin diseases, including rashes and neoplasms, will occur here. Labia majora will also have infections are restricted to skin such as **molluscum contagiosum**.
    - The vagina is a squamous mucosa. Infections such as candidiasis, trichomonas and bacterial vaginosis are mucosa restricted.
    - The labia minora is a combination histology of skin and mucosa called **mucocutaneous** and it can have diseases of both skin and squamous mucosa.
  - o The distinction between the labia and vagina often starts to blur after several deliveries and for this reason, the region is often called “*vulvovaginal*” and area entering the vagina as the “*introitus*”.
  - o Diseases of the labia can be clinically divided into rashes (red and white) and masses (rule out neoplasm).
    - **Rashes** can be acute (days) or chronic (months – years). The commonest acute rashes are infections, which *hurt* and the contact dermatitides, which *itch*.

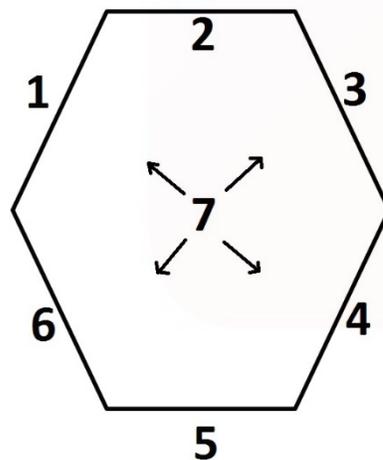
- Acute infections of the labia tend to be benign and self-limited. Treatment is mostly comfort related.
- Contact dermatitides can be seen as *papules* (< 1cm) or *patches* (>1 cm). With stimulation by the underlying inflammation or rubbing, there is epidermal hyperplasia, which gives a raised area or *plaque*.
- The distinction between red and white abnormalities is not particularly useful in diagnosis. An abnormal lesion will be seen as white whenever there is *hyperkeratosis* (i.e. thickening of the stratum corneum). In a moist environment, hyperkeratosis absorbs water and appears white.
- A key clinical distinction is between *hyperplasia* and *dysplasia*. Hyperplasia represents a physiologic response to pathologic stimulation such as rubbing an area of pruritis. Remove the stimulus and the skin will go back to normal. Dysplasia represents precancer and has to be destroyed to prevent progression into invasive carcinoma.
- Just as there is squamous carcinoma in situ, the vulva has adenocarcinoma in situ, which has the historical name of **extramammary Paget disease**.
- **Masses** require biopsy or cytology to exclusion of neoplasm.
  - On physical examination, a solid mass is much more likely to be a neoplasm than a cyst.
- Vaginal discharges are a common problem in clinical medicine and mostly represent infections.
- **Cervix:**
  - Cervical neoplasia is important in countries with limited resources. **Cervical carcinoma** is a common cause of cancer death in reproductive age women.
    - Cervical cancer is not a common disease in the US. Of the 600,000 cancer deaths per year in the USA, cervical cancer accounts for fewer than 5,000 deaths /year. These occur mostly in older women who have avoided screening tests.
    - This decline in cervical cancer is the most successful cancer reduction effort in history.
  - Bleeding can come from the cervix, and cervical cancer must be excluded as a cause.
- **Uterus:**
  - Uterus has a mucosal endometrium lining the uterine cavity. This is surrounded by the myometrium. Most of the significant disease arises in the endometrium and presents with abnormal bleeding. Carcinoma must be ruled out.
    - The commonest pathology of the myometrium is a **leiomyoma**. These are common, benign and most commonly present as bleeding.
- **Ovary and fallopian tube:**

- On physical examination, these 2 structures cannot be differentiated by palpation and so are together called the *adnexae*.
- Symptoms from these organs are mostly abdominal pain and infertility.
- Pain of fallopian tube origin is due to rupture of an **ectopic pregnancy** or the inflammation of **acute pelvic inflammatory disease (PID)** due to the sexually transmitted infections of chlamydia and gonorrhea.
- Pain of ovarian origin can be due to a **ruptured cyst** or **ovarian torsion**. Torsion usually has an underlying ovarian mass such as a benign cystic teratoma.
- Diseases of the ovary and tube are commonly implicated in infertility. This is its own subject, discussed in: [Female reproductive endocrinology, amenorrhea & infertility](#).

- **Pelvic pain**

- This is included in the differential diagnosis of abdominal pain. For further discussion, see: [GI, clinical pathologic correlation](#).
- The differential diagnosis of acute pelvic pain includes:

Organ	Disease	Diagnosis
<b>Ovary</b>	Ruptured cyst	Imaging
	Torsion	
<b>Fallopian tube</b>	Acute PID	NAT <sup>1</sup> , P/E <sup>2</sup> , imaging
	Ectopic pregnancy	
<b>Appendix</b>	Appendicitis	Imaging
<b>Peritoneum, myometrium</b>	Endometriosis	· Laparoscopy · Imaging
	Adenomyosis	



1	RUQ
2	Epigastrium
3	LUQ
4	LLQ
5	Pelvis
6	RLQ
7	Diffuse

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**Do You Know It?**

1. Name diseases that present with these symptoms:

Organ	Presentation	Disease
<b>Vulva</b>	Patches & plaques	
	Mass	
<b>Vagina</b>	Mass	
	Discharge	
<b>Cervix</b>	Screening	
	Bleeding	
<b>Uterus</b>	Bleeding	
<b>Ovary &amp; tube</b>	Infertility	
<b>General</b>	Acute pelvic pain	

2. Why does it matter that there are different types of squamous epithelium of the labia and vulva?
3. What is the difference in the treatment of a hyperplasia versus a dysplasia?
4. What is the differential diagnosis of pelvic pain and how are they diagnosed?