Identification and Management of Vaginal Infections

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Disclosure

I have no financial interests or relationships to disclose.

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Objectives

- Determine the differential diagnosis in assessing vaginal discharge
- Explain importance of vaginal pH in assessing vaginal infections
- Describe CDC recommended treatment of vaginal infections
- Understand treatment methods for Bartholin's gland abscess

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Vaginitis

- Inflammation or infection of the vagina
- Common reason for clinic visits
  - Affect absenteeism from work/school, sexual function, self-image

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Vaginal Infections Overview

- Classification
- Clinical presentation
- Diagnosis
- Treatment

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Case

- 22-year-old presents to GYN office with reports of vaginal discharge.
  - -What is our differential diagnosis?
  - -What additional information do we need?

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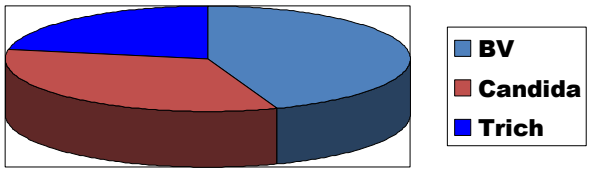
Vaginal Infections Classification



Candida 17-39%
BV 22-50%
Trich 4-35%

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Role of Estrogen

- Estrogen
  - Increases glycogen stores in vaginal epithelial cells
  - Encourages lactobacilli colonization
    - Aids in maintaining appropriate vaginal pH
    - Protects against pathogenic organisms
      - Encourages heterogeneity of normal vaginal flora including: Mycoplasm, Gardnerella, E coli, group B strep, Candida
  - Lack of estrogen (menopausal)
    - Paucity of epithelial cells, thin epithelium
    - Elevated vaginal pH due to sparse lactobacilli
    - Less commonly have BV and candidiasis

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Case

- 22 year old presents to GYN office with reports of vaginal discharge.
  - Discharge is white in color and described as thick
  - Associated symptoms of itching, externally and internally
  - Has been on antibiotics for urinary infection

  - What is the most likely diagnosis?
  - What is the most likely organism?

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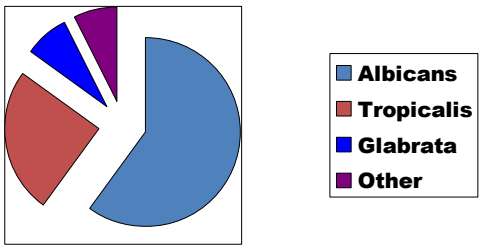
Candida Vaginitis Microbiology



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Candidiasis Predisposing Factors

- Antibiotic therapy
- Corticosteroid therapy
- Diabetes

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Candidiasis Predisposing Factors

- Oral contraceptives
- Pregnancy
- Immunodeficiency disorder
- Use of vaginal oils

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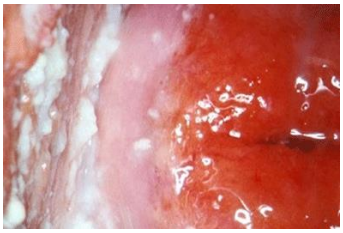
Candidiasis
Clinical Manifestations

- Pruritus
- Erythema
- Edema
- Satellite pustules
- White, curd-like discharge



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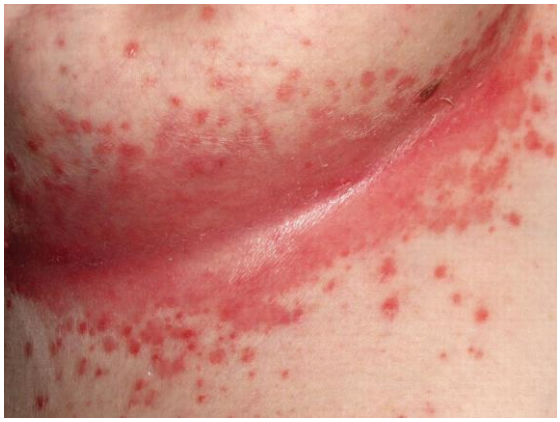
Candidiasis
Satellite Lesions



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Candidiasis Diagnosis

- Normal vaginal pH
- Microscopy with KOH preparation
  - 50-70% sensitivity
- Culture – consider for patients who have been refractory to treatment
- PCR- high sensitivity but expensive

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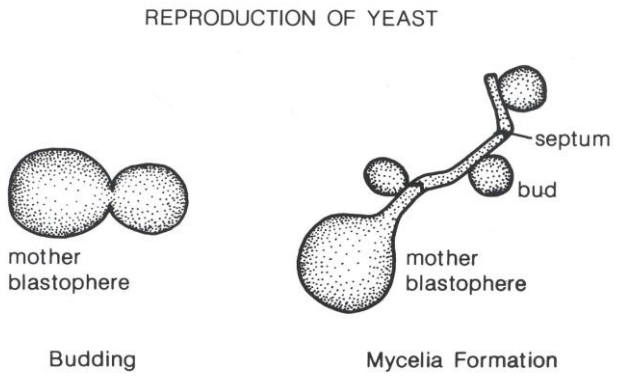
Candidiasis Diagnosis



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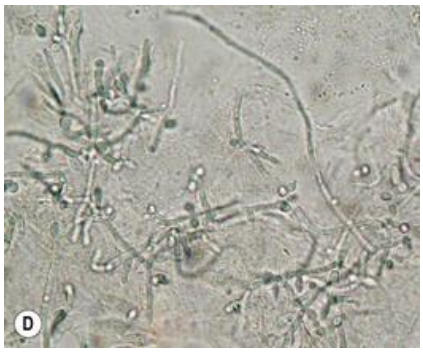
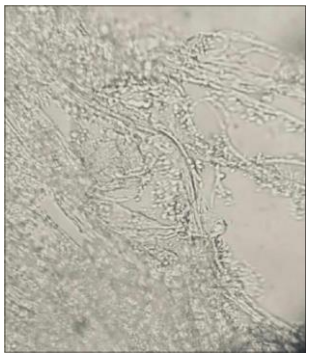
Candidiasis Diagnosis





KOH preparation

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Candidiasis Preventive Measures

- Avoid bubble baths
- Avoid douching
- Avoid use of vaginal oils
- Wear cotton undergarments
- Careful hygiene

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Candidiasis Treatment

- Topical anti-fungal agents
  - Miconazole - OTC
  - Clotrimazole - OTC
  - Terconazole - prescription
- Oral anti-fungal agents
  - Fluconazole

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Complicated Candidiasis

- Definition:
  - Recurrent episodes- greater than 4 in 1 yr
  - Severe symptoms
  - Suspected non-albicans species
  - Immunocompromised
- Culture needed to identify species

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Treatment Of Recurrent Candidiasis

- Use topical or oral agent monthly after menses
- Use oral medication weekly x 12 weeks
- Use oral medication daily

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Non-Albicans Species Treatment

- Intravaginal boric acid (600mg daily for 14 days)
- Topical flucytosine (5 g nightly for 2 wk)

Boric Acid can be fatal if ingested orally

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Case

- 22 year old presents to GYN office with reports of vaginal discharge.
  - Discharge is yellow/green in color
  - Associated symptoms of vaginal irritation, burning, pruritus, dysuria, frequency, lower abdominal pain, and dyspareunia
  - New sexual partner

  - What is the most likely diagnosis?
  - What is the most likely organism?

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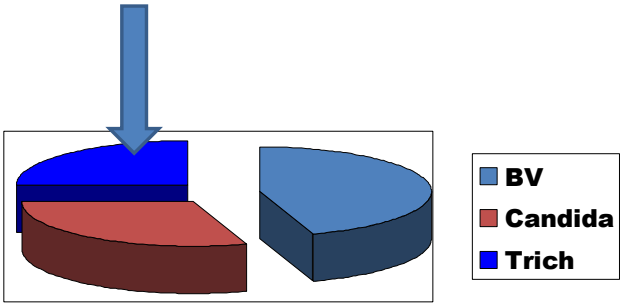
Trichomoniasis



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Trichomoniasis Epidemiology

- Protozoan infection- Trichomonas vaginalis
- Most common nonviral STI in the US
- Incubation period is 4 to 28 days
- Highly contagious

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Trichomoniasis Risk Factors

- More common in black women
- Increased risk with:
  - Multiple partners
  - Low SES
  - Douching

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Trichomoniasis Clinical Manifestations

- Frequency
- Dysuria
- Dyspareunia
- Erythema

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Trichomoniasis Clinical Manifestations

- Pruritus
- Yellow-green, frothy discharge
- Punctate cervical hemorrhages
- Vaginal pH > 4.5

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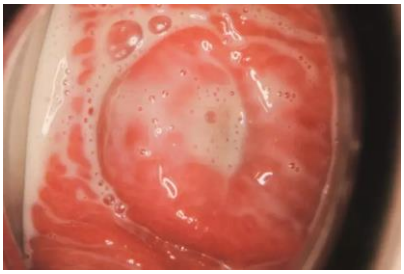
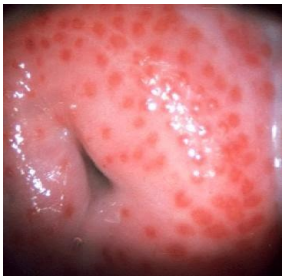
Trichomoniasis Vaginal Discharge





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Trichomoniasis Diagnosis

- Pap smear
- Saline preparation
- Culture - rarely indicated in clinical practice (takes 5 days)
- NAAT *** preferred as most sensitivity/specificity

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Trichomoniasis Diagnosis

TEST	SENSITIVITY (RANGE)
Saline preparation	50 to 60%
Culture	90 to 100 %
NAAT	95 to 100%

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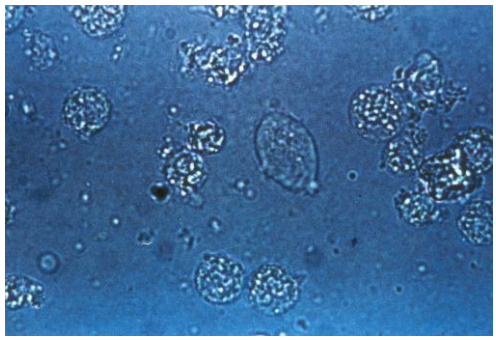
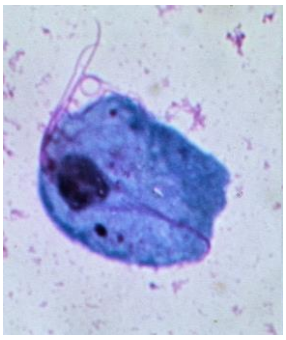
Trichomoniasis Saline Preparation





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Trichomoniasis Treatment

- Drug of choice is oral metronidazole
  - 500 mg BID x 7 days
    - More effective and also covers for BV
  - Single 2 gram dose
  - 250 mg TID x 7 days

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Trichomoniasis Treatment

- Sexual partner should be treated
- Couple should use condoms until partner is treated

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Case

- 22 year old presents to GYN office with reports of vaginal discharge.
  - Discharge describe as thin, white
  - Describes foul smelling discharge
  - Sexually active

  - What is the most likely diagnosis?
  - What is the most likely organism(s)?

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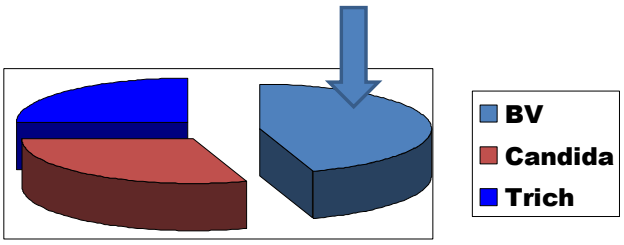
Bacterial Vaginosis



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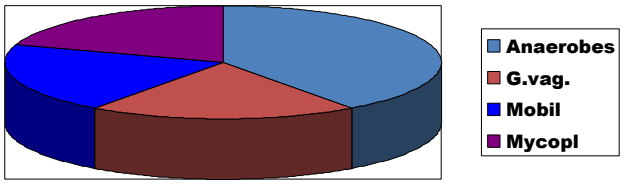
Bacterial Vaginosis Microbiology



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Bacterial Vaginosis Pathophysiology

- Results from disruption of normal, lactobacilli-dominant flora--->elevation of pH and overgrowth of anaerobes
  - G vaginalis
  - Bacteroides
  - Peptostreptococcus
  - Fusobacterium
  - Prevotella
  - Atopobium

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Bacterial Vaginosis Risk Factors

- Most common in Black, Hispanic, Mexican women
- Associated with:
  - Menses
  - Douching
  - Use of lubricants such as petroleum jelly
  - Intercourse
  - Antibiotic exposure
- Increases risk of PID and STI

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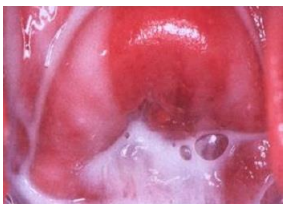
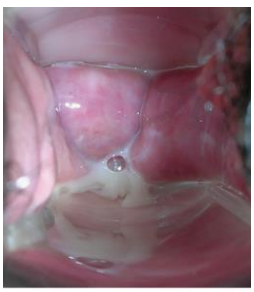
Bacterial Vaginosis Clinical Manifestations

- Thin, gray discharge
- Prominent vaginal odor
- Minimal inflammation
- No pruritus





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Bacterial Vaginosis Diagnosis

- Amstel's criteria
  - Thin white-gray discharge
  - Vaginal pH > 4.5
  - Positive KOH whiff test (amine test)
  - More than 20% Clue cells
  - **need ¾**

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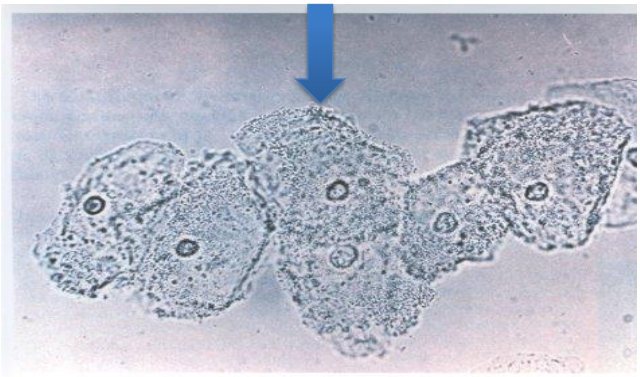
Bacterial Vaginosis Saline Microscopy



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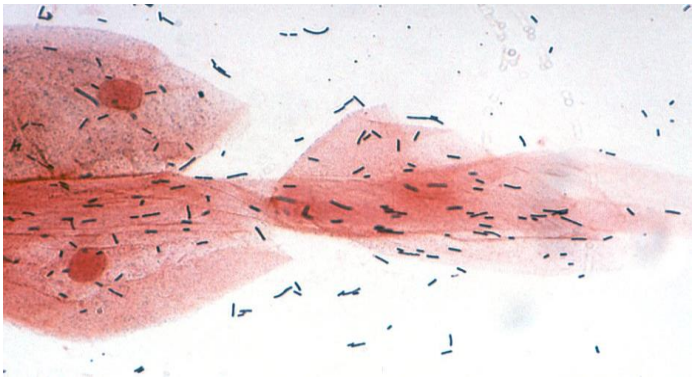
Gram Stain of Normal Vaginal Secretions



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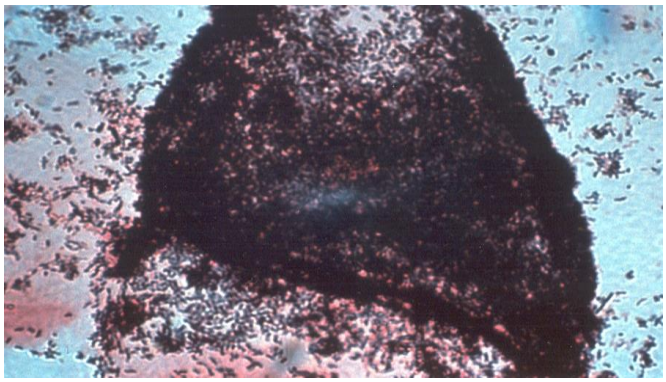
Bacterial Vaginosis Gram Stain



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Systemic Complications Of Bacterial Vaginosis

- PID
- Postoperative infection
- PPROM
- Preterm delivery
- Chorioamnionitis
- Endometritis

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Bacterial Vaginosis Treatment

- Topical metronidazole – once daily x 5 days at bedtime
  - More expensive
  - Less likely to prevent systemic complications of BV
- **Oral metronidazole – 500 mg twice daily for 7 days**

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Management of Recurrent Bacterial Vaginosis

- Recurs in up to 30% of patients
- Diagnosed if 3+ episodes in 1 yr
- Options:
  - Twice weekly metronidazole gel for 16 wks (after acute episode treatment)
  - Alterative regimens
    - Secnidazole, tinidazole, clindamycin oral

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ACOG PB

Table 1. Clinical Features of Vaginitis

Condition	Symptoms/Discharge	Examination Findings	pH Level	Microscopy/KOH Test Results	Diagnostic Tests
Normal physiologic discharge	White and creamy or clear discharge	White discharge in vaginal fornix and adherent to vaginal walls	3.5–4.5	Mature squamous cells, rare PMN, background bacteria dominated by lactobacillus	N/A
Bacterial vaginosis	Increased thin, watery, white-gray vaginal discharge often with fishy odor. Most are asymptomatic.	Thin, white-gray homogenous discharge	More than 4.5	Clue cells (more than 20%), no PMNs, a positive KOH "whiff" test result. Decreased or absent lactobacilli and increased cocci, and small curved rods	Recommended: • Amsel criteria • Gram stain with Nugent scoring Alternative: • FDA-approved commercial tests
Trichomoniasis	Yellow-to-green frothy vaginal discharge, abnormal vaginal odor, pruritus, irritation, and dysuria. More than half are asymptomatic.	Yellow, frothy vaginal discharge; vaginal or cervical-vaginal erythema with petechiae	More than 4.5	Motile trichomonads, abundant PMNs, bacteria with both bacillus and cocci, variable KOH "whiff" test results	Recommended: • NAAT Alternative: • FDA-approved commercial tests • Culture
Vulvovaginal candidiasis	Normal-appearing discharge or thick, white vaginal discharge, pruritus, burning, dyspareunia and dysuria	Thick, white, curd-like vaginal discharge. In severe vulvovaginal candidiasis, erythema, edema, excoriations, and fissures may be present.	3.5–4.5	Branching pseudohyphae, budding pseudohyphae (10x), or spores (40x) with 10% potassium hydroxide. Mature squamous cells, rare PMNs, bacteria dominated by lactobacillus	Recommended: • Microscopy • Yeast culture Alternative: • FDA-approved commercial tests

Abbreviations: NAAT, nucleic acid amplification test; PMN, polymorphonuclear leukocytes.

Data from Nyirjesy P. Management of Persistent Vaginitis: A Clinical Expert Series. Obstet Gynecol 2014; 124:1135–46; *and* Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. Centers for Disease Control and Prevention [published erratum appears in MMWR Recomm Rep 2015;64:924]. MMWR Recomm Rep 2015;64(RR-03):1–137.

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Vaginal Infections Conclusions

INFECTION	TREATMENT
Candidiasis	Topical or oral antifungal agent
Trichomoniasis	Metronidazole , 500 mg p.o. BID x 7d Or Tinidazole, 2 g p.o. x 1
BV	Metronidazole, 500 mg p.o. BID x 7d Or Metronidazole gel 0.75%, 5g intravaginally x 5d Or Clindamycin cream 2%, 5 g intravaginally x 7d

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What About the Pap?

- Do not recommend treatment of vaginal infections based on pap smear findings
  - Candidiasis
    - Present in 20-30% of asymptomatic patients who don't require treatment
  - BV
    - Sensitivity 49%
  - Trichomoniasis
    - Sensitivity 55-60%

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Can I Take Something to Prevent Infection?

- Candidiasis
  - Lactobacillus not found to be effective for prevention
- Bacterial vaginosis
  - Probiotics not found to be effective for treatment or prevention

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Bartholin's Gland Abnormalities Overview

- Cyst
- Abscess
- Tumor

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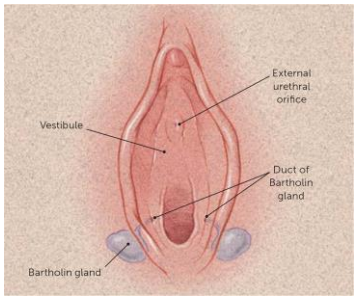
Bartholin's Gland Normal Anatomy



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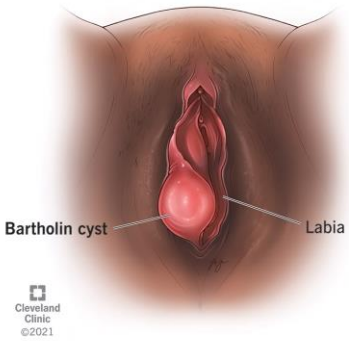
Bartholin's Gland Cyst Clinical Manifestations



- Pain
- Swelling
- Palpable mass

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Bartholin's Gland Abscess Clinical Manifestations

- Fever
- Pain
- Swelling
- Erythema
- Fluctuant mass
- Purulent drainage

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Bartholin's Gland Abscess Pathogens

- Gonorrhea
- Chlamydia
- Coliforms
- Anaerobes

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Bartholin's Gland Tumor Clinical Manifestations

- Swelling
- Firm, indurated mass
- Most likely tumor- adenocarcinoma

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Bartholin's Gland Masses Management

DIAGNOSIS	MANAGEMENT
Cyst	Drainage + sitz baths Marsupialization
Abscess	Drainage + antibiotics + sitz baths Marsupialization
Tumor	Biopsy Excision

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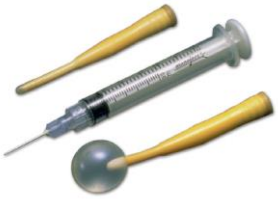
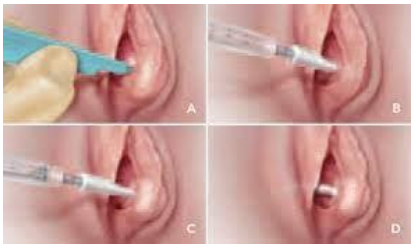
Bartholin's Gland Masses Technique Of Drainage





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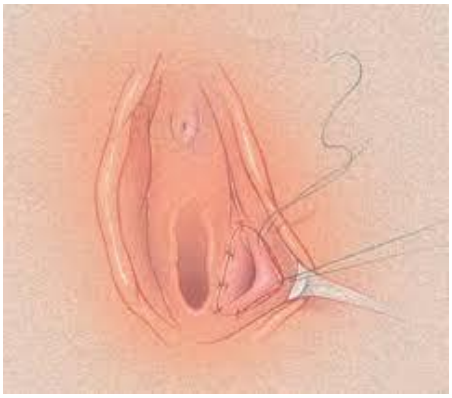
Techniques Of Marsupialization



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Bartholin's Gland Abscess Oral Antibiotics

- Doxycycline (100 mg BID) plus metronidazole (500 mg BID)
- Amoxicillin plus clavulanic acid (875 mg BID)

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KRR Pearls

- What is a quick, inexpensive way to help you decide between vaginal infections that doesn't include a microscope?
- What is the normal pH of a vagina?
- What is the pH of a vagina with candidiasis? BV? Trich?

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KRR Pearls

- Where is the Bartholin's gland located?
- When should you perform a biopsy of a Bartholin's gland abscess?
- How long should a word catheter remain in place?
- What is the purpose of a word catheter?

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KRR Pearls

- Why should we treat BV in the OB patient? GYN patient?
- What are Amstel's criteria?
- How many criteria are needed to make the diagnosis of BV?

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References

- CDC STI treatment guidelines: https://www.cdc.gov/std/treatment-guidelines/default.htm
- ACOG Practice Bulletin #215, Vaginitis in Nonpregnant Patients. January 2020